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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
GARY PIERCE
PAUL NEWMAN
SANDRA D. KENNEDY
BOB STUMP

IN THE MATTER OF THE APPLICATION OF RIO RICO UTILITIES, INC. FOR A DETERMINATION OF THE FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS WATER AND WASTEWATER RATES AND CHARGES FOR UTILITY SERVICE THEREON.	DOCKET NO. WS-02676A-09-0257 **STAFF'S NOTICE OF FILING DIRECT TESTIMONY**

The Utilities Division of the Arizona Corporation Commission ("Staff") hereby files the Direct Testimony of Staff Witnesses Juan C. Manrique, and Jian W. Liu in the above-referenced matter.

RESPECTFULLY submitted this 15th day of December, 2009.

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BEFORE THE ARIZONA CORPORATION COMMISSION

KRISTIN K. MAYES
    Chairman
GARY PIERCE
    Commissioner
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    Commissioner

IN THE MATTER OF THE APPLICATION OF RIO RICO UTILITIES INC., AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE FAIR VALUE OF ITS UTILITY PLANTS AND PROPERTY AND FOR INCREASES IN ITS WASTEWATER RATES AND CHARGES FOR UTILITY SERVICE BASED THEREON.	DOCKET NO. WS-02676A-09-0257

DIRECT

TESTIMONY

OF

JUAN C. MANRIQUE

PUBLIC UTILITIES ANALYST I

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

DECEMBER 15, 2009

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SCHEDULES

EXECUTIVE SUMMARY
RIO RICO UTILITIES INC.
DOCKET NO. WS-02676A-09-0257

The direct testimony of Staff witness Juan C. Manrique addresses the following issues:

<u>Capital Structure</u> – Staff recommends that the Commission adopt a capital structure for Rio Rico Utilities Inc. ("Applicant") for this proceeding consisting of 0.0 percent debt and 100.0 percent equity.

<u>Cost of Equity</u> – Staff recommends that the Commission adopt a 9.2 percent return on equity ("ROE") for the Applicant. Staff's estimated ROE for the Applicant is based on cost of equity estimates for the sample companies ranging from 9.9 percent for the discounted cash flow method ("DCF") to 11.0 percent for the capital asset pricing model ("CAPM"). Staff's ROE recommendation includes a 1.3 percent downward adjustment to reflect a lower financial risk in the Applicant's capital structure compared to that of the sample companies.

<u>Overall Rate of Return</u> – Staff recommends that the Commission adopt a 9.2 percent overall rate of return ("ROR").

<u>Mr. Bourassa's Testimony</u> – The Commission should reject the Company proposed 12.4 percent ROE for the following reasons:

> Mr. Bourassa's DCF estimates rely heavily on analyst's forecasts and provide little weight to historical dividend per share growth rates.

1 **I. INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Juan C. Manrique. I am a Public Utilities Analyst employed by the Arizona

4 Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff").

5 My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

6

7 **Q. Briefly describe your responsibilities as a Public Utilities Analyst.**

8 A. In my position as a Public Utilities Analyst, I perform studies to estimate the cost of

9 capital component in rate filings to determine the overall revenue requirement and analyze

10 requests for financing authorizations.

11

12 **Q. Please describe your educational background and professional experience.**

13 A. I graduated from Arizona State University and received a Bachelor of Science degree in

14 Finance. My course of studies included courses in corporate and international finance,

15 investments, accounting, statistics, and economics. I began employment as a Staff Public

16 Utilities Analyst in October 2008. My professional experience includes two years as a

17 Loan Officer with a homebuilder and as an Associate for an Investor Relations firm.

18

19 **Q. What is the scope of your testimony in this case?**

20 A. My testimony provides Staff's recommended capital structure, return on equity ("ROE")

21 and overall rate of return ("ROR") for establishing the revenue requirements for Rio Rico

22 Utilities, Inc.'s ("Rio Rico" or "Applicant") pending water division and wastewater

23 division rate applications.

1   **Q.   Please provide a brief description of Rio Rico.**

2   A.   Rio Rico is an Arizona Corporation that is engaged in the business of providing public

3   water (approximately 6,600 customers) and wastewater (approximately 2,300 customers)

4   utility service in and near the community of Rio Rico within portions of Santa Cruz

5   County, Arizona.

6

7   **Q.   Please provide a brief description of Rio Rico and its relation to affiliates.**

8   A.   Rio Rico is owned by Algonquin Water Resources of America, Inc. ("AWRA"). AWRA

9   is an indirect wholly-owned subsidiary of Algonquin Power Income Fund which is

10   publicly traded on the Toronto Stock Exchange. Rio Rico is a sister company to other

11   public service corporations regulated by the Commission including: Bella Vista Water

12   Company, Black Mountain Sewer Corporation, Litchfield Park Service Company,

13   Northern Sunrise Water Company, Southern Sunrise Water Company and Gold Canyon

14   Sewer Company.

15

16   **Summary of Testimony and Recommendations**

17   **Q.   Briefly summarize how Staff's cost of capital testimony is organized.**

18   A.   Staff's cost of capital testimony is presented in ten sections. Section I is this introduction.

19   Section II discusses the concept of weighted average cost of capital ("WACC"). Section

20   III presents the concept of capital structure and presents Staff's recommended capital

21   structure for Rio Rico in this proceeding. Section IV discusses the concepts of return on

22   equity ("ROE") and risk. Section V presents the methods employed by Staff to estimate

23   Rio Rico's ROE. Section VI presents the findings of Staff's ROE analysis. Section VII

24   presents Staff's final cost of equity estimates for Rio Rico. Section VIII presents Staff's

25   ROR recommendation. Section IX presents Staff's comments on the direct testimony of

1   the Applicant's witness, Mr. Thomas J. Bourassa.   Finally, section X presents the

2   conclusions.

3

4   Q.   **Have you prepared any exhibits to accompany your testimony?**

5   A.   Yes.   I prepared eight schedules (JCM-1 to JCM-9) that support Staff's cost of capital

6   analysis.

7

8   Q.   **What is Staff's recommended rate of return for Rio Rico?**

9   A.   Staff recommends a 9.2 percent overall ROR as shown in Schedule JCM-1. Staff's ROR

10   recommendation is based on cost of equity estimates for Rio Rico that range from 9.9

11   percent using the discounted cash flow method ("DCF") to 11.0 percent using the capital

12   asset pricing model ("CAPM").   Staff's ROR recommendation reflects a 1.3 percent

13   downward adjustment to the estimated ROE to account for a lower financial risk in the

14   Applicant's capital structure compared to that of the sample companies.

15

16   **Rio Rico's Proposed Overall Rate of Return**

17   Q.   **Briefly summarize Rio Rico's proposed capital structure, cost of debt, return on**

18   **equity and overall rate of return for this proceeding.**

19   A.   Table 1 summarizes the Applicant's proposed capital structure, cost of debt, return on

20   equity and overall rate of return in this proceeding:

21

22   **Table 1**

	Weight	Cost	Weighted Cost
Long-term Debt	0.0%	0.0%	0.0%
Common Equity		12.4%	12.4%
Cost of Capital/ROR			**12.4%**

23

1   Rio Rico is proposing an overall rate of return of 12.4 percent.

2

3   **II.   THE WEIGHTED AVERAGE COST OF CAPITAL**

4   **Q.   Briefly explain the cost of capital concept.**

5   A.   The cost of capital is the opportunity cost of choosing one investment over others with

6   equivalent risk. In other words, the cost of capital is the return that stakeholders expect

7   for investing their financial resources in a determined business venture over another

8   business venture.

9

10   **Q.   What is the overall cost of capital?**

11   A.   The cost of capital to a company issuing a variety of securities (i.e., stock and

12   indebtedness) is an average of the cost rates on all issued securities adjusted to reflect the

13   relative amounts for each security in the company's entire capital structure. Thus, the

14   overall cost of capital is the weighted average cost of capital ("WACC").

15

16   **Q.   How is the WACC calculated?**

17   A.   The WACC is calculated by adding the weighted expected returns of a firm's securities.

18   The WACC formula is:

19   Equation 1.

20

21    $$WACC = \sum_{i=1}^{n} W_i * r_i$$

22

23   In this equation, W_i is the weight given to the ith security (the proportion of the ith security

24   relative to the portfolio) and r_i is the expected return on the ith security.

Q.   **Can you provide an example demonstrating application of Equation 1?**

A.   Yes. For this example, assume that an entity has a capital structure composed of 60 percent debt and 40 percent equity. Also, assume that the embedded cost of debt is 6.0 percent and the expected return on equity, i.e. the cost of equity, is 10.5 percent. Calculation of the WACC is as follows:

$$WACC = (60\% * 6.0\%) + (40\% * 10.5\%)$$

$$WACC = 3.60\% + 4.20\%$$

$$WACC = 7.80\%$$

The weighted average cost of capital in this example is 7.80 percent. The entity in this example would need to earn an overall rate of return of 7.80 percent to cover its cost of capital.

III.   **CAPITAL STRUCTURE**

Background

Q.   **Please explain the capital structure concept.**

A.   The capital structure of a firm is the relative proportions of each type of security--short-term debt, long-term debt (including capital leases), preferred stock and common stock-- that are used to finance the firm's assets.

Q.   **How is the capital structure expressed?**

A.   The capital structure of a company is expressed as the percentage of each component of the capital structure (capital leases, short-term debt, long-term debt, preferred stock and common stock) relative to the entire capital structure.

1   As an example, the capital structure for an entity that is financed by $20,000 of capital

2   leases, $85,000 of long-term debt, $15,000 of preferred stock and $80,000 of common

3   stock is shown in Table 2.

4

5

Table 2

Component			%
Capital Leases	$20,000	($20,000/$200,000)	10.0%
Long-Term Debt	$85,000	($85,000/$200,000)	42.5%
Preferred Stock	$15,000	($15,000/$200,000)	7.5%
Common Stock	$80,000	($80,000/$200,000)	40.0%
Total	$200,000		100%

6

7   The capital structure in this example is composed of 0.0 percent short-term debt, 10.0

8   percent capital leases, 42.5 percent long-term debt, 7.5 percent preferred stock and 40.0

9   percent common stock.

10

11   **Rio Rico's Capital Structure**

12   **Q.   What capital structure does Rio Rico propose?**

13   A.   The Applicant proposes a capital structure composed of 0.0 percent debt and 100.0 percent

14   common equity.

15

16   **Q.   How does Rio Rico's capital structure compare to capital structures of publicly**

17   **traded water utilities?**

18   A.   The Applicant's capital structure is composed of 0.0 percent debt and 100.0 percent

19   equity.   Schedule JCM-4 shows the capital structures of six publicly traded water

20   companies ("sample water companies") as of June 2009. The average capital structure for

1   the sample water utilities is comprised of approximately 50.2 percent debt and 49.8

2   percent equity.

3

4   **Staff's Capital Structure**

5   **Q.**   **What is Staff's recommended capital structure for Rio Rico?**

6   A.   Staff recommends a capital structure composed of 0.0 percent debt and 100.0 percent

7   equity, i.e., Staff concurs with the Applicant's proposed capital structure.

8

9   **IV.**   **RETURN ON EQUITY**

10   **Background**

11   **Q.**   **Please define the term "cost of equity capital."**

12   A.   The cost of equity is the rate of return that investors expect to earn on their investment in a

13   business entity given its risk. In other words, the cost of equity to the entity is the

14   investors' expected rate of return on other investments of similar risk. As investors have a

15   wide selection of stocks to choose from, they will choose stocks with similar risks but

16   higher returns. Therefore, the market determines the entity's cost of equity.

17

18   **Q.**   **Is there a correlation between interest rates and the cost of equity?**

19   A.   Yes. The cost of equity tends to move in the same direction as interest rates. This

20   relationship is part of the capital asset pricing model ("CAPM") formula. The CAPM is a

21   market-based model employed by Staff for estimating the cost of equity. The CAPM is

22   further discussed in Section V of this testimony.

1   **Q.**   **What has been the general trend of interest rates in recent years?**

2   **A.**   A chronological chart of interest rates is a good tool to show interest rate history and

3   identify trends. Chart 1 graphs intermediate U.S. treasury rates from November 1999 to

4   November 2009.

5

6

7

Chart 1: Average Yield on 5-, 7-, & 10-Year Treasuries
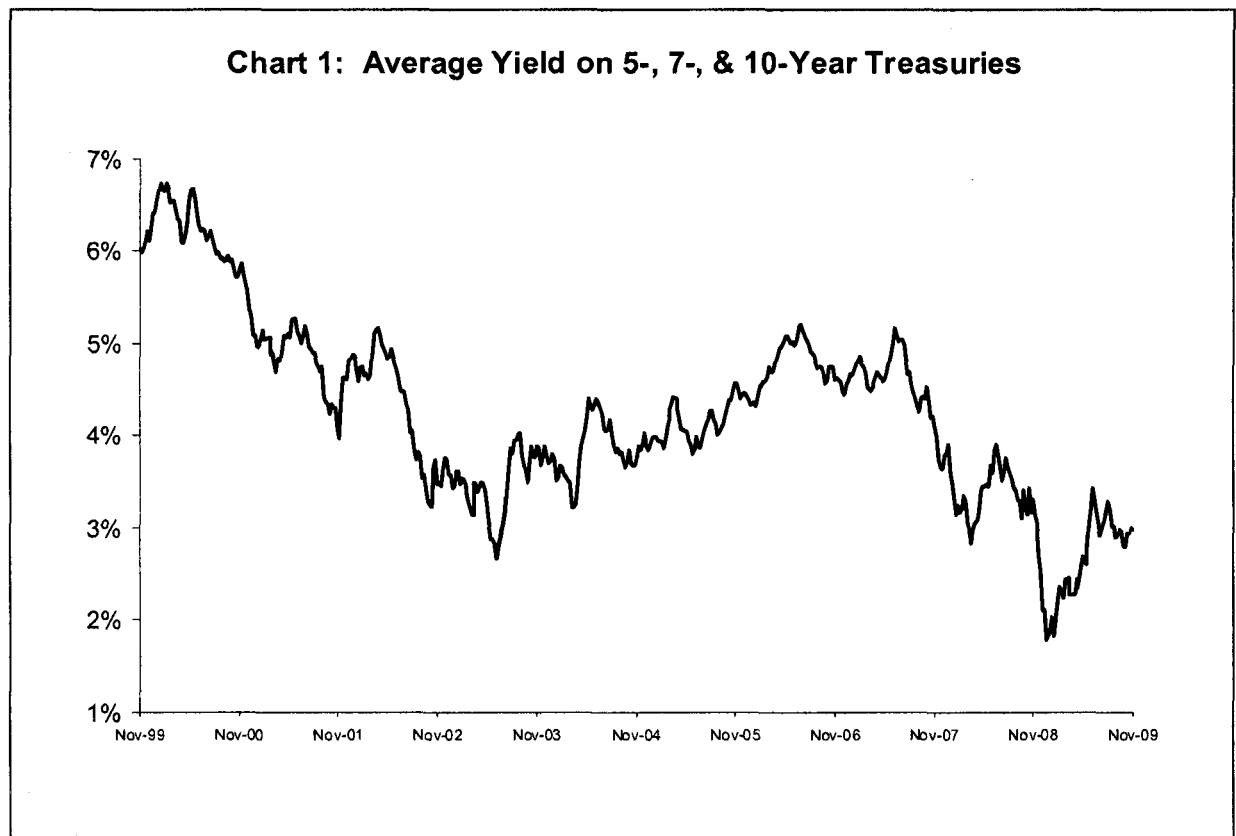
20   Chart 1 shows that intermediate interest rates trended downward from 2000 to mid-2003

21   then turned slightly upward until mid-2007 and have trended downward in the past two

22   years.

1   Q.   **What has been the general trend in interest rates longer term?**

2   A.   U.S. Treasury rates from 1959 to present are shown in Chart 2. The chart shows that

3   interest rates trended upward through the mid-1980s and have trended downward over the

4   last 25 years.

Chart 2: History of 5- and 10-Year Treasury Yields
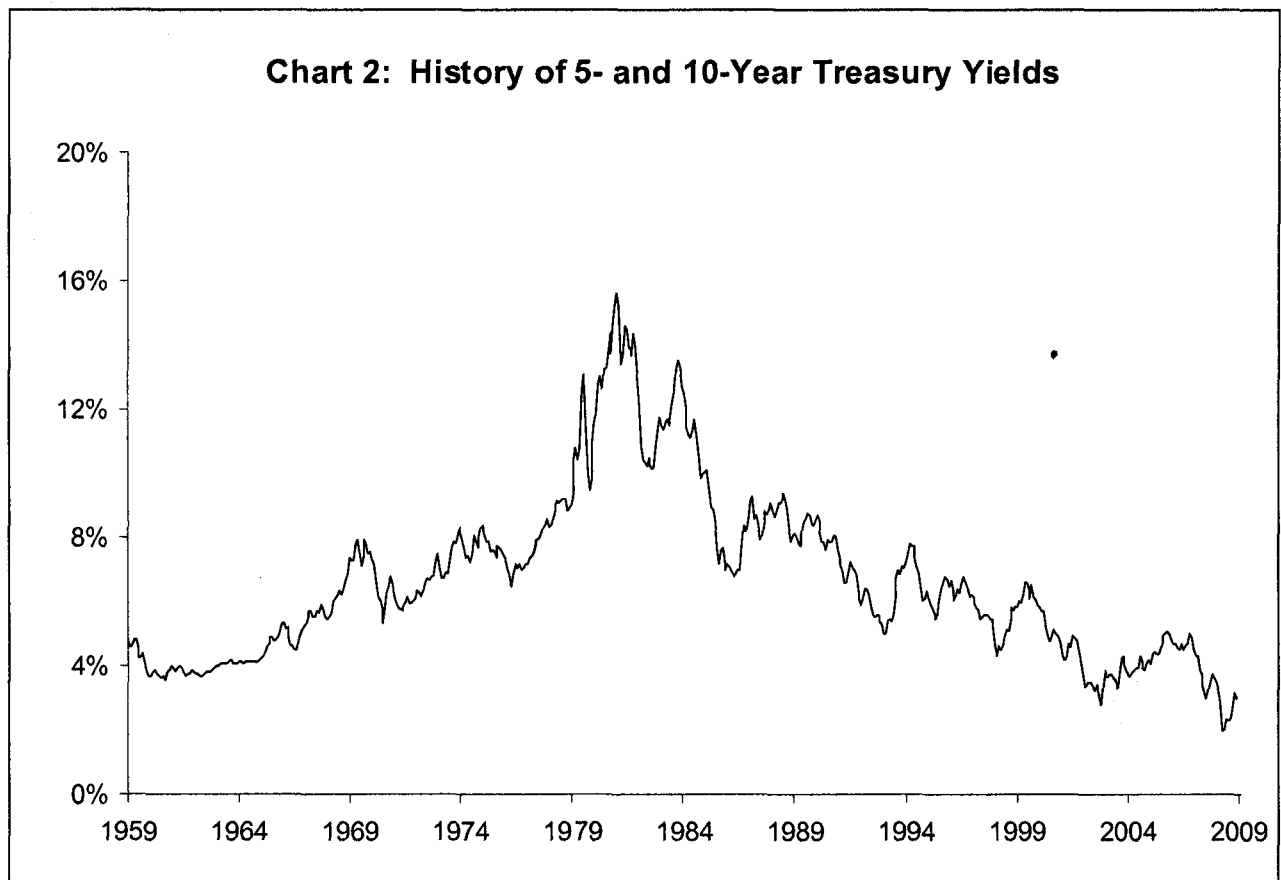
21   Q.   **Do these trends suggest anything in terms of cost of equity?**

22   A.   Yes. As previously demonstrated, interest rates and cost of equity tend to move in the

23   same direction; therefore cost of equity has declined in the past 25 years.

25   Q.   **Do actual returns represent the cost of equity?**

26   A.   No. The cost of equity represents investors' *expected* returns and not realized returns.

1   **Q.**   **Is there any information available that leads to an understanding of the relationship**

2   **between the equity returns required for a regulated water utility and those required**

3   **in the market as a whole?**

4   **A.**   Yes. A comparison of betas, a component of the CAPM discussed in Section V, for the

5   water utility industry and the market provide insight into this relationship. The average

6   beta (0.80)[1] for a water utility is lower than the theoretical average beta for all stocks (1.0).

7   According to the CAPM formula, the cost of equity capital moves in the same direction as

8   beta. Since the beta for the water utility industry is lower than the beta for the market, the

9   implication is that the required return on equity for a regulated water utility is below the

10   average required return on the market.

11

12   **Risk**

13   **Q.**   **Please define risk in relation to cost of capital.**

14   **A.**   Risk, as it relates to an investment, is the variability or uncertainty of the returns on a

15   particular security. Investors are risk averse and require a greater potential return to invest

16   in relatively greater risk opportunities, i.e., investors require compensation for taking on

17   additional risk. Risk is generally separated into two components. Those components are

18   market risk (systematic risk) and non-market risk (diversifiable risk or firm-specific risk).

19

20   **Q.**   **What is market risk?**

21   **A.**   Market risk or systematic risk is the risk of an investment that cannot be reduced through

22   diversification. Market risk stems from factors that affect all securities such as recessions,

23   war, inflation and high interest rates. Since these factors affect the entire market they

24   cannot be eliminated through diversification. Market risk does not impact each security to

---

[1] See Schedule JCM-7

1   the same degree. The degree to which any security's returns is affected by the market can

2   be measured using Beta. Beta reflects the business risk and the financial risk of a security.

3

4   **Q.**   **Please define business risk.**

5   A.   Business risk is the fluctuation of earnings inherent in a firm's operations and environment

6   such as competition and adverse economic conditions that may impair its ability to

7   provide returns on investment. Companies in the same or similar line of business tend to

8   experience the same fluctuations in business cycles.

9

10   **Q.**   **Please define financial risk.**

11   A.   Financial risk is the fluctuation of earnings inherent in using debt financing by a firm that

12   may impair its ability to provide adequate return. The more a company uses debt

13   financing, the more the company becomes exposed to financial risk.

14

15   **Q.**   **Do business risk and financial risk affect the cost of equity?**

16   A.   Yes.

17

18   **Q.**   **Is a firm subject to any other risk?**

19   A.   Yes. Firms are also subject to unsystematic or firm-specific risk. Examples of

20   unsystematic risk include losses caused by labor problems, nationalization of assets, loss

21   of a big client or weather conditions. Investors can eliminate firm-specific risk by holding

22   a diverse portfolio; thus, it is not of concern to diversified investors.

1 Q.   **How does Rio Rico's financial risk compare to the sample water companies' financial**

2   **risk from the perspective of an investor?**

3 A.   From an investor's perspective Rio Rico's capital structure is less risky than the sample

4   water companies. Schedule JCM-4 shows the capital structures of the six publicly traded

5   water companies ("sample water companies") as of June 2009, as well as Rio Rico's

6   actual capital structure. As of June 2009, the sample water utilities were capitalized with

7   approximately 50.2 percent debt and 49.8 percent equity, while Rio Rico's actual capital

8   structure consists of approximately 0.0 percent debt and 100.0 percent equity. Thus, Rio

9   Rico's shareholders bear less financial risk than the shareholders of the sample companies.

10

11 Q.   **Is firm-specific risk measured by beta?**

12 A.   No. Firm-specific risk is not measured by beta.

13

14 Q.   **Is the cost of equity affected by firm-specific risk?**

15 A.   No. Since firm-specific risk can be eliminated through diversification, it does not affect

16   the cost of equity.

17

18 Q.   **Can investors expect additional returns for firm-specific risk?**

19 A.   No. Investors who hold diversified portfolios can eliminate firm-specific risk, and

20   consequently, do not require any additional return. Since investors who choose to be less

21   than fully diversified must compete in the market with fully diversified investors, the

22   former cannot expect to be compensated for unique risk.

1   V.   **ESTIMATING THE COST OF EQUITY**

2   **Introduction**

3   **Q.   Did Staff directly estimate the cost of equity for Rio Rico?**

4   A.   No. Since Rio Rico is not a publicly-traded company, Staff is unable to directly estimate

5   Rio Rico's cost of equity due to the unavailability of financial information. Instead, Staff

6   uses an average of a representative sample group to reduce the sample error resulting from

7   random fluctuations in the market at the time the information is gathered.

8

9   **Q.   What companies did Staff select as proxies or comparables for Rio Rico?**

10 A.   Staff's sample consists of the following six publicly-traded water utilities: American

11   States Water, California Water, Connecticut Water Services, Middlesex Water, Aqua

12   America and SJW Corp. Staff chose these companies because they are publicly traded

13   and receive the majority of their earnings from regulated operations.

14

15 **Q.   Please explain the relevance of using six water companies as a proxy for the**

16   **wastewater division of Rio Rico.**

17 A.   While the provision of wastewater service is different from the provision of water service,

18   water and wastewater utilities are subject to similar risk factors and regulatory oversight.

19   Therefore, the sample water companies are an appropriate proxy for the wastewater

20   division of Rio Rico as well as the water division.

21

22 **Q.   What models did Staff implement to estimate Rio Rico's cost of equity?**

23 A.   Staff used two market-based models to estimate the cost of equity for Rio Rico: the

24   discounted cash flow ("DCF") model and the capital asset pricing model ("CAPM").

1 Q.   **Please explain why Staff chose the DCF and CAPM models.**

2 A.   Staff chose to use the DCF and CAPM models because they are widely recognized market

3   based models and have been used extensively to estimate the cost of equity.   An

4   explanation of the DCF and CAPM models follows.

5

6 **Discounted Cash Flow Model Analysis**

7 Q.   **Please provide a brief summary of the theory upon which the DCF method of**

8   **estimating the cost of equity is based.**

9 A.   The DCF method of stock valuation is based on the theory that the value of an investment

10   is equal to the sum of the future cash flows generated from the aforementioned investment

11   discounted to the present time. This method uses expected dividends, market price and

12   dividend growth rate to calculate the cost of capital. Professor Myron Gordon pioneered

13   the DCF method in the 1960s. The DCF method has become widely used to estimate the

14   cost of equity for public utilities due to its theoretical merit and its simplicity. Staff used

15   the financial information for the relevant six sample companies in the DCF model and

16   averaged the results to determine an estimated cost of equity for the sample companies.

17

18 Q.   **Does Staff use more than one version of the DCF Model?**

19 A.   Yes. Staff uses two versions of the DCF model: the constant-growth DCF Model and the

20   multi-stage or non-constant growth DCF. The constant-growth DCF Model assumes that

21   an entity's dividends will grow indefinitely at the same rate. The multi-stage growth DCF

22   model assumes the dividend growth rate will change at some point in the future.

23

1   **The Constant-Growth DCF**

2   **Q.   What is the mathematical formula used in Staff's constant-growth DCF analysis?**

3   A.   The constant-growth DCF formula used in Staff's analysis is:

4

Equation 2 :

$$K = \frac{D_1}{P_0} + g$$

where : K =   the cost of equity
D_1 =   the expected annual dividend
P_0 =   the current stock price
g =   the expected infinite annual growth rate of dividends

5   Equation 2 assumes that the entity has a constant earnings retention rate and that its

6   earnings are expected to grow at a constant rate. According to Equation 2, a stock with a

7   current market price of $10 per share, an expected annual dividend of $0.45 per share and

8   an expected dividend growth rate of 3.0 percent per year has a cost of equity to the entity

9   of 7.5 percent reflected by the sum of the dividend yield ($0.45/ $10 = 4.5 percent) and the

10   3.0 percent annual dividend growth rate.

11

12   **Q.   How did Staff calculate the dividend yield component (D_1/P_0) of the constant-growth**

13   **DCF formula?**

14   A.   Staff calculated the yield component of the DCF formula by dividing the expected annual

15   dividend[2] (D_1) by the spot stock price (P_0) after the close of the market November 4, 2009,

16   as reported by *MSN Money*.

---

[2] Value Line Summary & Index. 11-06-09

1   **Q.**   **Why did Staff use the November 4, 2009, spot price rather than a historical average**

2   **stock price to calculate the dividend yield component of the DCF formula?**

3   **A.**   Current, rather than historic, market stock price is used in order to be consistent with

4   finance theory, i.e., the efficient market hypothesis. The efficient market hypothesis

5   asserts that the current stock price reflects all available information on a stock including

6   investors' expectations of future returns. Use of a historical average of stock prices

7   illogically discounts the most recent information in favor of less recent information. The

8   latter is stale and is representative of underlying conditions that may have changed.

9

10   **Q.**   **How did Staff estimate the dividend growth (g) component of the constant-growth**

11   **DCF model represented by Equation 2?**

12   **A.**   The dividend growth component used by Staff is determined by the average of six

13   different estimation methods as shown in Schedule JCM-8. Staff calculated historical and

14   projected growth estimates on dividend-per-share ("DPS"),[3] earnings-per-share ("EPS")[4]

15   and sustainable growth bases.

16

17   **Q.**   **Why did Staff examine EPS growth to estimate the dividend growth component of**

18   **the constant-growth DCF model?**

19   **A.**   Historic and projected EPS growth are used because dividends are related to earnings.

20   Dividend distributions may exceed earnings in the short run but cannot continue

21   indefinitely. In the long term, dividend distributions are dependent on earnings.

---

[3] Derived from information provided by *Value Line*
[4] Derived from information provided by *Value Line*

1 Q.   **How did Staff estimate historical DPS growth?**

2 A.   Staff estimated historical DPS growth by calculating the average rate of growth in DPS of

3   the sample water companies from 1998 to 2008. The results of that calculation are shown

4   in Schedule JCM-5. Staff calculated an average historical DPS growth rate of 3.1 percent

5   for the sample water utilities for the aforementioned period.

6

7 Q.   **How did Staff estimate the projected DPS growth?**

8 A.   Staff calculated an average of the projected DPS growth rates for the sample water utilities

9   from *Value Line*. The average projected DPS growth rate is 4.1 percent as shown in

10   Schedule JCM-5.

11

12 Q.   **How did Staff calculate the historical EPS growth rate?**

13 A.   Staff estimated historical EPS growth by calculating the average rate of growth in EPS of

14   the sample water companies from 1998 to 2008. Staff calculated an average historical

15   EPS growth rate of 3.3 percent for the sample water utilities for the aforementioned period

16   as shown in Schedule JCM-5.

17

18 Q.   **How did Staff estimate the projected EPS growth?**

19 A.   Staff calculated an average of the projected EPS growth rates for the sample water utilities

20   from *Value Line*. The average projected EPS growth rate is 9.7 percent as shown in

21   Schedule JCM-5.

22

1   **Q.   How does Staff calculate its historical and projected sustainable growth rates?**

2   A.   Historical and projected sustainable growth rates are calculated by adding their respective

3   retention growth rate terms (br) to their respective stock financing growth rate terms (vs)

4   as shown in Schedule JCM-6.

5

6   **Q.   What is retention growth?**

7   A.   Retention growth is the growth in dividends due to the retention of earnings.   The

8   retention growth concept is based on the theory that dividend growth cannot be achieved

9   unless the company retains and reinvests some of its earnings.   The retention growth is

10   used in Staff's calculation of sustainable growth shown in Schedule JCM-6.

11

12 **Q.   What is the formula for the retention growth rate?**

13 A.   The retention growth rate is the product of the retention ratio and the book/accounting

14   return on equity. The retention growth rate formula is:

15

    Equation 3 :

    $$\text{Retention Growth Rate} = br$$

    where : b =   the retention ratio $(1 - \text{dividend payout ratio})$
                r =   the accounting/book return on common equity

16

17 **Q.   How did Staff calculate the average historical retention growth rate (br) for the**

18 **   sample water utilities?**

19 A.   Staff calculated the historical retention rates by averaging the retention rates for the

20   sample water companies from 1999 to 2008. The historical average retention (br) growth

21   for the sample water utilities is 3.0 percent, as shown in Schedule JCM-6.

1 **Q.   How did Staff determine projected retention growth rate (br) for the sample water**

2 **utilities?**

3 A.   Staff used the retention growth projections for the sample water utilities for the period

4 2012 to 2014 from *Value Line*. The projected average retention growth rate for the sample

5 water utilities is 6.1 percent, as shown in Schedule JCM-6.

6

7 **Q.   When can retention growth provide a reasonable estimate of future dividend**

8 **growth?**

9 A.   The retention growth rate is a reasonable estimate of future dividend growth when the

10 retention ratio is reasonably constant and the entity's market price to book value ("market-

11 to-book ratio") is expected to be 1.0. The average retention ratio has been reasonably

12 constant in recent years. However, the market-to-book ratio for the sample water utilities

13 is 1.7, notably higher than 1.0, as shown in Schedule JCM-7.

14

15 **Q.   Is there any financial implication of a market-to-book ratio greater than 1.0?**

16 A.   Yes. A market-to-book ratio greater than 1.0 implies that investors expect an entity to

17 earn an accounting/book return on its equity that exceeds its cost of equity.   The

18 relationship between required returns and expected cash flows is readily observed in the

19 fixed securities market. For example, assume an entity contemplating issuance of bonds

20 with a face value of $10 million at either 6 percent or 8 percent, and thus, paying annual

21 interest of $600,000 or $800,000, respectively. Regardless of investors' required return on

22 similar bonds, investors will be willing to pay more for the bonds if issued at 8 percent

23 than if the bonds are issued at 6 percent. For example, if the current interest rate required

24 by investors is 6 percent, then they would bid $10 million for the 6 percent bonds and

25 more than $10 million for the 8 percent bonds. Similarly, if equity investors require a 9

26 percent return and expect an entity to earn accounting/book returns of 13 percent, the

1   market will bid up the price of the entity's stock to provide the required return of 9

2   percent.

3

4   **Q.**   **How has Staff generally recognized a market-to-book ratio exceeding 1.0 in its cost of**

5   **equity analyses in recent years?**

6   A.   Staff has assumed that investors expect the market-to-book ratio to remain greater than

7   1.0. Given that assumption, Staff has added a stock financing growth rate (vs) term to the

8   retention ratio (br) term to calculate its historical and projected sustainable growth rates.

9

10   **Q.**   **Do the historical and projected sustainable growth rates Staff uses to develop its**

11   **DCF cost of equity in this case continue to include a stock financing growth rate**

12   **term?**

13   A.   Yes.

14

15   **Q.**   **What is stock financing growth?**

16   A.   Stock financing growth is the growth in an entity's dividends due to the sale of stock by

17   that entity. Stock financing growth is a concept derived by Myron Gordon and discussed

18   in his book *The Cost of Capital to a Public Utility.*[5] Stock financing growth is the product

19   of the fraction of the funds raised from the sale of stock that accrues to existing

20   shareholders (v) and the fraction resulting from dividing the funds raised from the sale of

21   stock by the existing common equity (s).

22

23

24

---

[5] Gordon, Myron J. *The Cost of Capital to a Public Utility.* MSU Public Utilities Studies, Michigan, 1974. pp 31-35.

1   **Q.**   **What is the mathematical formula for the stock financing growth rate?**

2   A.   The mathematical formula for stock financing growth is:

Equation 4 :

$$\text{Stock Financing Growth} = vs$$

where : v = Fraction of the funds raised from the sale of stock that accrues to existing shareholders

        s = Funds raised from the sale of stock as a fraction of the existing common equity

3

4   **Q.**   **How is the variable v presented above calculated?**

5   A.   Variable v is calculated as follows:

Equation 5 :

$$v = 1 - \left(\frac{book\ value}{market\ value} \right)$$

6

7   For example, assume that a share of stock has a $30 book value and is selling for $45.

8   Then, to find the value of v, the formula is applied:

$$v = 1 - \left(\frac{30}{45} \right)$$

9   In this example, v is equal to 0.33.

10

11   **Q.**   **How is the variable s presented above calculated?**

12   A.   Variable s is calculated as follows:

13   Equation 6:

14

15

$$s = \frac{\text{Funds raised from the issuance of stock}}{\text{Total existing common equity before the issuance}}$$

1   For example, assume that an entity has $150 in existing equity, and it sells $30 of stock.

2   Then, to find the value of s, the formula is applied:

$$s = \left(\frac{30}{150}\right)$$

3   In this example, s is equal to 20.0 percent.

4

5   Q.   **What is the vs term when the market-to-book ratio is equal to 1.0?**

6   A.   A market-to-book ratio equal to 1.0 reflects that investors expect an entity to earn a

7   book/accounting return on their equity investment equal to the cost of equity. When the

8   market-to-book ratio is equal to 1.0, none of the funds raised from the sale of stock by the

9   entity accrues to the benefit of existing shareholders, i.e., the term v is equal to zero (0.0).

10   Consequently, the vs term is also equal to zero (0.0). When stock financing growth is

11   zero, dividend growth depends solely on the br term.

12

13   Q.   **What is the effect of the vs term when the market-to-book ratio is greater than 1.0?**

14   A.   A market-to-book ratio greater than 1.0 reflects that investors expect an entity to earn a

15   book/accounting return on their equity investment greater than the cost of equity.

16   Equation 5 shows that when the market-to-book ratio is greater than 1.0 the v term is also

17   greater than zero. The excess by which new shares are issued and sold over book value

18   per share of outstanding stock is a contribution that accrues to existing stockholders in the

19   form of a higher book value. The resulting higher book value leads to higher expected

20   earnings and dividends. Continued growth from the vs term is dependent upon the

21   continued issuance and sale of additional shares at a price that exceeds book value per

22   share.

1   **Q.**   **What *vs* estimate did Staff calculate from its analysis of the sample water utilities?**

2   A.   Staff estimated an average stock financing growth of 2.0 percent for the sample water

3   utilities as shown in Schedule JCM-6.

4

5   **Q.**   **What would occur if an entity had a market-to-book ratio greater than 1.0 as a result**

6   **of investors expecting earnings to exceed the cost of equity capital and the entity**

7   **subsequently experienced newly-authorized rates equal to its cost of equity capital?**

8   A.   Market pressure on the entity's stock price to reflect the change in future expected cash

9   flows would cause the market-to-book ratio to move toward 1.0.

10

11   **Q.**   **Is inclusion of the vs term necessary if the average market-to-book ratio of the**

12   **sample water utilities falls to 1.0 due to authorized ROEs equaling the cost of equity?**

13   A.   No. As discussed above, when the market-to-book ratio is equal to 1.0, none of the funds

14   raised from the sale of stock by the entity accrues to the benefit of existing shareholders

15   because the v term equals to zero, and consequently, the *vs* term also equals zero. When

16   the market-to-book ratio equals 1.0, dividend growth depends solely on the *br* term.

17   Staff's inclusion of the *vs* term assumes that the market-to-book ratio continues to exceed

18   1.0 and that the water utilities will continue to issue and sell stock at prices above book

19   value with the effect of benefitting existing shareholders.

20

21   **Q.**   **What are Staff's historical and projected sustainable growth rates?**

22   A.   Staff's estimated historical sustainable growth rate is 5.0 percent based on an analysis of

23   earnings retention for the sample water companies. Staff's projected sustainable growth

24   rate is 9.0 percent based on retention growth projected by *Value Line*. Schedule JCM-6

25   presents Staff's estimates of the sustainable growth rate.

1   **Q.**   **What is Staff's expected infinite annual growth rate in dividends?**

2   A.   Staff's expected infinite annual growth rate in dividends is 5.7 percent which is the

3   average of historical and projected dividends per share ("DPS"), earnings per share

4   ("EPS"), and sustainable growth estimates. Staff's calculation of the expected infinite

5   annual growth rate in dividends is shown in Schedule JCM-8.

6

7   **Q.**   **What is Staff's constant-growth DCF estimate for the sample utilities?**

8   A.   Staff's constant-growth DCF estimate is 9.4 percent as shown in Schedule JCM-3.

9

10   *The Multi-Stage DCF*

11   **Q.**   **Why did Staff implement the multi-stage DCF model to estimate Rio Rico's cost of**

12   **equity?**

13   A.   Staff generally uses the multi-stage DCF model to consider the assumption that dividends

14   may not grow at a constant rate. The multi-stage DCF uses two stages of growth. The

15   first stage is four years followed by the second constant growth stage.

16

17   **Q.**   **What is the mathematical formula for the multi-stage DCF?**

18   A.   The multi-stage DCF formula is shown in the following equation:

Equation 7 :

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)}\right]^n$$

Where : P_0 =   current stock price

D_t =   dividends expected during stage 1

K =   cost of equity

n =   years of non − constant growth

D_n =   dividend expected in year n

g_n =   constant rate of growth expected after year n

1   **Q.**   **What steps did Staff take to implement its multi-stage DCF cost of equity model?**

2   **A.**   First, Staff projected future dividends for each of the sample water utilities using near-

3   term and long-term growth rates. Second, Staff calculated the rate (cost of equity) which

4   equates the present value of the forecasted dividends to the current stock price for each of

5   the sample water utilities. Lastly, Staff calculated an average of the individual sample

6   company cost of equity estimates.

7

8   **Q.**   **How did Staff calculate near-term (stage-1) growth?**

9   **A.**   The stage-1 growth rate is based on *Value Lines's* projected dividends for the next twelve

10   months, when available, and on the average dividend growth rate (5.7 percent) calculated

11   in Staff's constant DCF analysis for the remainder of the stage.

12

13   **Q.**   **How did Staff estimate long-term (stage-2) growth?**

14   **A.**   Staff calculated the stage-2 growth rate using the arithmetic mean rate of growth in GDP

15   from 1929 to 2008.[6] Using the GDP growth rate assumes that the water utility industry is

16   expected to grow at the same rate as the overall economy.

17

18   **Q.**   **What is the historical GDP growth rate that Staff used to estimate stage-2 growth?**

19   **A.**   Staff used 6.7 percent to estimate the stage-2 growth rate.

20

21   **Q.**   **What is Staff's multi-stage DCF estimate for the sample utilities?**

22   **A.**   Staff's multi-stage DCF estimate is 10.3 percent, as shown in Schedule JCM-3.

---

[6] www.bea.doc.gov

1   **Q.**   **What is Staff's overall DCF estimate for the sample utilities?**

2   **A.**   Staff's overall DCF estimate is 9.9 percent. Staff calculated the overall DCF estimate by

3   averaging the constant growth DCF (9.4%) and multi-stage DCF (10.3%) estimates as

4   shown in Schedule JCM-3.

5

6   **Capital Asset Pricing Model**

7   **Q.**   **Please describe the CAPM.**

8   **A.**   The CAPM is used to determine the prices of securities in a competitive market. The

9   CAPM model describes the relationship between a security's investment risk and its

10   market rate of return. Under the CAPM an investor requires the expected return of a

11   security to equal the rate on a risk-free security plus a risk premium. If the investor's

12   expected return does not meet or beat the required return, the investment is not

13   economically justified. The model also assumes that investors will sufficiently diversify

14   their investments to eliminate any non-systematic or unique risk.[7] In 1990, Professors

15   Harry Markowitz, William Sharpe, and Merton Miller earned the Nobel Prize in

16   Economic Sciences for their contribution to the development of the CAPM.

17

18   **Q.**   **Did Staff use the same sample water utilities in its CAPM and DCF cost of equity**

19   **estimation analyses?**

20   **A.**   Yes. Staff's CAPM cost of equity estimation analysis uses the same sample water

21   companies as its DCF cost of equity estimation analysis.

22

---

[7] The CAPM makes the following assumptions: 1) single holding period; 2) perfect and competitive securities market; 3) no transaction costs; 4) no restrictions on short selling or borrowing; 5) the existence of a risk-free rate; and 6) homogeneous expectations.

1   Q.   **What is the mathematical formula for the CAPM?**

2   A.   The mathematical formula for the CAPM is:

3

Equation 8 :
$$K = R_f + \beta (R_m - R_f)$$

where: R_f = risk free rate

R_m = return on market

β = beta

$R_m - R_f$ = market risk premium

K = expected return

4

5   The equation shows that the expected return (K) on a risky asset is equal to the risk-free

6   interest rate (R_f) plus the product of the market risk premium ("Rp") ($R_m - R_f$) multiplied

7   by beta (β) where beta represents the riskiness of the investment relative to the market.

8

9   Q.   **What is the risk free rate?**

10   A.   The risk free rate is the rate of return of an investment with zero risk.

11

12

13   Q.   **What does Staff use as surrogates to represent estimations of the risk-free rates of**

14   **interest in its historical and current market risk premium CAPM methods?**

15   A.   Staff uses separate parameters as surrogates for the estimations of the risk-free rates of

16   interest for the historical market risk premium CAPM cost of equity estimation and the

17   current market risk premium CAPM cost of equity estimation. Staff uses the average of

18   three (five-, seven-, and ten-year) intermediate-term U.S. Treasury securities' spot rates in

19   its historical market risk premium CAPM cost of equity estimation, and the 30-year U.S.

1   Treasury bond spot rate in its current market risk premium CAPM cost of equity

2   estimation. U.S. Treasuries are largely verifiable and readily available.

3

4   **Q.**   **What does beta measure?**

5   A.   Beta measures the volatility, or systematic risk, of a security relative to the market. Since

6   systematic risk cannot be diversified away, it is the only risk that is relevant when

7   estimating a security's required return. Using a baseline market beta of 1.0, a security

8   with a beta less than 1.0 will be less volatile than the market. A security with a beta

9   greater than 1.0 will be more volatile than the market.

10

11   **Q.**   **How did Staff estimate Rio Rico's beta?**

12   A.   Staff used the average of the *Value Line* betas for the sample water utilities as a proxy for

13   Rio Rico's beta. Schedule JCM-7 shows the *Value Line* betas for each of the sample

14   water utilities. The 0.80 average beta for the sample water utilities is Staff's estimated

15   beta for Rio Rico. A security with a 0.80 beta has less volatility than the market.

16

17   **Q.**   **Please describe expected market risk premium $(R_m - R_f)$?**

18   A.   The expected market risk premium is the expected return on the market above the risk free

19   rate. Simplified, it is the return an investor expects as compensation for market risk.

20

21   **Q.**   **What did Staff use for the market risk premium?**

22   A.   Staff uses separate calculations for the market risk premium in its historical and current

23   market risk premium CAPM methods.

1   **Q.   How did Staff calculate an estimate for the market risk premium in its historical**

2   **market risk premium CAPM method?**

3   A.   Staff uses the intermediate-term government bond income returns published in the

4   Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation 2008 Yearbook* to calculate the

5   historical market risk premium. Ibbotson Associates calculates the historical risk

6   premium by averaging the historical arithmetic differences between the S&P 500 and the

7   intermediate-term government bond income returns for the period 1926-2008. Staff's

8   historical market risk premium estimate is 6.9 percent as shown in Schedule JCM-3.

9

10   **Q.   How did Staff calculate an estimate for the market risk premium in its current**

11   **market risk premium CAPM method?**

12   A.   Staff solves equation 8 above to arrive at a market risk premium using a DCF derived

13   expected return (K) of 15.54 (2.2 + 13.34[8]) percent using the expected dividend yield (2.2

14   percent over the next twelve months) and the annual per share growth rate (13.34 percent)

15   that *Value Line* projects for all dividend-paying stocks under its review[9] along with the

16   current long-term risk-free rate (30-year Treasury note at 4.41 percent) and the market's

17   average beta of 1.0. Staff calculated the current market risk premium as 11.13[10] as shown

18   in Schedule JCM-3.

19

20   **Q.   What is the result of Staff's historical market risk premium CAPM and current**

21   **market risk premium CAPM cost of equity estimations for the sample utilities?**

22   A.   Staff's cost of equity estimates are 8.6 percent using the historical market risk premium

23   CAPM and 13.3 using the current market risk premium CAPM.

---

[8] The three to five year price appreciation is 65%. $1.65^{0.25} - 1 = 13.34\%$
[9] November 6, 2009 issue date.
[10] $15.54\% = 4.41\% + (1)(11.13\%)$

1   **Q.**   **What is Staff's overall CAPM estimate for the sample utilities?**

2   A.   Staff's overall CAPM cost of equity estimate is 11.0 percent which is the average of the

3   historical market risk premium CAPM (8.6 percent) and the current market risk premium

4   CAPM (13.3 percent) estimates as shown in Schedule JCM-3.

5

6   **VI.**   **SUMMARY OF STAFF'S COST OF EQUITY ANALYSIS**

7   **Q.**   **What is the result of Staff's constant-growth DCF analysis to estimate of the cost of**

8   **equity to the sample water utilities?**

9   A.   Schedule JCM-3 shows the result of Staff's constant-growth DCF analysis. The result of

10   Staff's constant-growth DCF analysis is as follows:

11

$$k = 3.7\% + 5.7\%$$

12

13    $$k = \mathbf{9.4\%}$$

14   Staff's constant-growth DCF estimate of the cost of equity to the sample water utilities is

15   9.4 percent.

16

17   **Q.**   **What is the result of Staff's multi-stage DCF analysis to estimate of the cost of equity**

18   **for the sample utilities?**

19   A.   Schedule JCM-9 shows the result of Staff's multi-stage DCF analysis. The result of

20   Staff's multi-stage DCF analysis is:

21

Company	Equity Cost Estimate (k)
American States Water	9.8%
California Water	10.0%
Aqua America	10.2%
Connecticut Water	10.7%
Middlesex Water	11.4%
SJW Corp	9.8%
Average	**10.3%**

1   Staff's multi-stage DCF estimate of the cost of equity for the sample water utilities is 10.3

2   percent.

3

4   Q.   **What is Staff's overall DCF estimate of the cost of equity for the sample utilities?**

5   A.   Staff's overall DCF estimate of the cost of equity for the sample utilities is 9.9 percent.

6   Staff calculated an overall DCF cost of equity estimate by averaging Staff's constant

7   growth DCF (9.4 percent) and Staff's multi-stage DCF (10.3 percent) estimates as shown

8   in Schedule JCM-3.

9

10   Q.   **What is the result of Staff's historical market risk premium CAPM analysis to**

11   **estimate of the cost of equity for the sample utilities?**

12   A.   Schedule JCM-3 shows the result of Staff's CAPM analysis using the historical risk

13   premium estimate. The result is as follows:

14         $$k = 3.0\% + 0.80 * 6.9\%$$

15         $$k = 8.6\%$$

16

17   Staff's CAPM estimate (using the historical market risk premium) of the cost of equity to

18   the sample water utilities is 8.6 percent.

19

20   Q.   **What is the result of Staff's current market risk premium CAPM analysis to**

21   **estimate the cost of equity for the sample utilities?**

22   A.   Schedule JCM-3 shows the result of Staff's CAPM Analysis using the current market risk

23   premium estimate. The result is:

24         $$k = 4.4\% + 0.80 * 11.1\%$$

25         $$k = 13.3\%$$

26

1   Staff's CAPM estimate (using the current market risk premium) of the cost of equity to the

2   sample water utilities is 13.3 percent.

3

4   **Q.**   **What is Staff's overall CAPM estimate of the cost of equity for the sample utilities?**

5   A.   Staff's overall CAPM estimate for the sample utilities is 11.0 percent. Staff's overall

6   CAPM estimate is the average of the historical market risk premium CAPM (8.6 percent)

7   and the current market risk premium CAPM (13.3 percent) estimates as shown in

8   Schedule JCM-3.

9

10   **Q.**   **Please summarize the results of Staff's cost of equity analysis for the sample utilities.**

11   A.   The following table shows the results of Staff's cost of equity analysis:

12

13

Table 2

Method	Estimate
Average DCF Estimate	9.9%
Average CAPM Estimate	11.0%
Overall Average	**10.5%**

14

15   Staff's average estimate of the cost of equity to the sample water utilities is 10.5 percent.

16

17   **VII.**   **FINAL COST OF EQUITY ESTIMATES FOR RIO RICO**

18   **Q.**   **Please compare Rio Rico's capital structure to that of the six sample water**

19   **companies.**

20   A.   The average capital structure for the sample water utilities is composed of 49.8 percent

21   equity and 50.2 percent debt, as shown in Schedule JCM-4. Rio Rico's capital structure is

22   composed of 100.0 percent equity and 0.0 percent debt. In this case, since Rio Rico's

23   capital structure is less leveraged than that of the average sample water utilities' capital

1   structure, its stockholders bear less financial risk than the sample water utilities.

2   Accordingly, Rio Rico's cost of equity is lower than that of the sample water utilities.

3

4   Q.   **What method does Staff use to calculate the effect on the cost of equity capital of the**

5   **different financial risks posed by Rio Rico versus the sample companies?**

6   A.   Staff uses the methodology developed by Professor Robert Hamada of the University of

7   Chicago, which incorporates capital structure theory with the CAPM, to estimate the

8   effect of Rio Rico's capital structure on its cost of equity. Staff calculated a financial risk

9   adjustment for Rio Rico of negative 130 basis points (1.3 percent) based on the

10   Company's capital structure of 100.0 percent equity and 0.0 percent debt in order to

11   reflect the Company's actual financial risk. Rio Rico's cost of equity adjusted for

12   financial risk (9.2 percent) can be determined by subtracting this 1.3 percent financial risk

13   adjustment from Staff's average estimate of the cost of equity to the sample water utilities

14   (10.5 percent).

15

16   Q.   **Does Staff's 130 basis point downward financial risk adjustment to the cost of equity**

17   **reflect the full downward measure to the cost of equity due to difference in financial**

18   **risk in Rio Rico's capital structure compared to the sample water utilities?**

19   A.   No. Staff calculated its recommended 130 basis point downward financial risk adjustment

20   assuming that the sample companies had a capital structure comprised of 60 percent equity

21   and 40 percent debt instead of the actual average capital structure for the sample

22   companies and assuming that the Company's capital structure is composed of 100.0

23   percent equity and 0.0 percent debt. The calculated downward financial risk adjustment

24   would have been greater than 130 basis points if measured using 100.0 percent equity for

25   the Company's capital structure and the sample companies' actual average equity of 49.8

26   percent. Staff measured the financial risk adjustment assuming the 60 percent equity for

1   the sample companies to recognize that a capital structure composed of 60 percent equity

2   and 40 percent debt is reasonable even though it is less leveraged than that of the sample

3   companies and to encourage the Company to maintain a healthy capital structure.

4

5   **Q.   What is Staff's ROE estimate for Rio Rico?**

6   A.   Staff determined an ROE estimate of 10.5 percent for the Applicant based on cost of

7   equity estimates for the sample companies ranging from 9.9 percent for the CAPM to 11.0

8   percent for the DCF. Staff recommends adoption of a 130 basis point downward financial

9   risk adjustment of the ROE to 9.2 percent.

10

11 **VIII.   RATE OF RETURN RECOMMENDATION**

12 **Q.   What overall rate of return did Staff determine for Rio Rico?**

13 A.   Staff determined a 9.2 percent ROR for the Applicant as shown in Schedule JCM-1 and

14 the following table:

15

16 **Table 3**

17

	Weight	Cost	Weighted Cost
Long-term Debt	0.0%	0.0%	0.0%
Common Equity	100.0%	9.2%	9.2%
Overall ROR			**9.2%**

18

19 **IX.   STAFF RESPONSE TO APPLICANT'S COST OF CAPITAL WITNESS MR.**

20 **THOMAS J. BOURASSA**

21 **Q.   Please summarize Mr. Bourassa's analyses and recommendations.**

22 A.   Mr. Bourassa recommends a 12.4 percent ROE based on analyses for two constant growth

23 DCF models (Past and Future Growth and Future Only Growth), as well as historical and

1 current market risk premium CAPM for the same sample of water companies selected by

2 Staff. Mr. Bourassa also asserts that Rio Rico faces additional risks not captured by the

3 market models, such as regulatory and financial risk, and he concludes that 12.4 percent

4 ROE presents a reasonable balance resulting from his analyses. Mr. Bourassa also

5 proposes 12.4 percent for the overall ROR with a capital structure consisting of 100.0

6 percent equity and 0.0 percent debt.

7

Constant-Growth DCF

8

9 **Q. Does Mr. Bourassa give equal weight to historical data and analysts' projections to**

10 **estimate the growth component of his DCF cost of equity estimate?**

11 A. No. Mr. Bourassa's DCF cost of equity estimate is based on the midpoint of his (1) Past

12 and Future Growth estimate and (2) Future Growth estimate. Half of the Past and Future

13 Growth estimate relies on analysts' projections of earnings growth and all of the Future

14 Growth estimate relies on analysts' projections of earnings growth. Thus, choosing the

15 midpoint of the two methods provides analysts' projections with 75 percent of the weight

16 compared to 25 percent for historical data. In addition, Mr. Bourassa's Past and Future

17 Growth estimate provides equal weight to stock price, book value per share, earnings per

18 share and dividends per share. Thus, only one-eighth (12.5 percent) of his method of

19 estimating the dividend growth relies on the growth in dividends per share.

20

21 **Q. Does Staff have any comments on Mr. Bourassa's heavy reliance on analysts'**

22 **forecasts to estimate DPS growth in his constant growth DCF estimates?**

23 A. Yes. Generally, analysts' forecasts are known to be overly optimistic. Heavy use of

24 analysts' forecasts to calculate the growth in dividends (g), will cause inflated growth, and

25 consequently, inflated cost of equity estimates unless investors give the same strong

26 weight to analysts' forecasts. Also, heavy reliance on analysts' forecasts of earnings

1   growth to forecast DPS is inappropriate because it assumes that investors discount other

2   relevant information such as past dividend and earnings growth.

3

4 Q.   **Does Staff have any evidence to support its assertion that heavy reliance on analysts'**

5   **forecasts of earnings growth in the DCF model would result in inflated cost of equity**

6   **estimates?**

7 A.   Yes. Experts in the financial community have commented on the optimism in analysts'

8   forecasts of future earnings.[11] A study cited by David Dreman in his book *Contrarian*

9   *Investment Strategies: The Next Generation* found that *Value Line* analysts were

10   optimistic in their forecasts by 9 percent annually, on average for the 1987 – 1989 period.

11   Another study conducted by David Dreman found that between 1982 and 1997, analysts

12   overestimated the growth of earnings of companies in the S&P 500 by 188 percent.

13   Also, Burton Malkiel of Princeton University studied the one-year and five-year earnings

14   forecasts made by some of the most respected names in the investment business. His

15   results showed that the five-year estimates of professional analysts, when compared with

16   actual earnings growth rates, were much worse than the predictions from several naïve

17   forecasting models, such as the long-run rate of growth of national income. In the

18   following excerpt from Professor Malkiel's book *A Random Walk Down Wall Street*, he

19   discusses the results of his study:

20   When confronted with the poor record of their five-year growth
21   estimates, *the security analysts honestly, if sheepishly, admitted*
22   *that five years ahead is really too far in advance to make reliable*
23   *projections.* They protested that although long-term projections
24   are admittedly important, they really ought to be judged on their
25   ability to project earnings changes one year ahead. Believe it or

---

[11] See Seigel, Jeremy J. Stocks for the Long Run. 2002. McGraw-Hill. New York. p. 100.   Dreman, David.
Contrarian Investment Strategies: The Next Generation. 1998. Simon & Schuster. New York. pp. 97-98. Malkiel,
Burton G. *A Random Walk Down Wall Street*. 2003. W.W. Norton & Co. New York. p. 175.
Testimony of Professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier
Bureau), FCC Docket 79-63, p. 95.

1   not, it turned out that their one-year forecasts were even worse than
2   their five-year projections.

3   The analysts fought back gamely. They complained that it was
4   unfair to judge their performance on a wide cross section of
5   industries, because earnings for high-tech firms and various
6   "cyclical" companies are notoriously hard to forecast. *"Try us on*
7   *utilities," one analyst confidently asserted. At the time they were*
8   *considered among the most stable group of companies because of*
9   *government regulation. So we tried it and they didn't like it. Even*
10   *the forecasts for the stable utilities were far off the mark.*[12]
11   (Emphasis added)

12

13   **Q.   Are investors aware of the problems related to analysts' forecasts?**

14   A.   Yes. In addition to books, there are numerous published articles appearing in *The Wall*

15   *Street Journal* and other financial publications that cast doubt as to how accurate research

16   analysts are in their forecasts.[13] Investors, being keenly aware of these inherent biases in

17   forecasts, will use other methods to assess future growth.

18

19   **Q.   Does Staff have any comments on the study cited by Mr. Bourassa, conducted by**

20   **David A. Gordon, Myron J. Gordon and Lawrence I. Gould[14] that he asserts**

21   **supports exclusive use of analysts' forecasts in the DCF model?**

22   A.   Yes. The article cited by Mr. Bourassa does not conclude that investors ignore past

23   growth when pricing stocks. Instead, the article describes more generally that methods

24   exclusively using analysts' forecasts are "popular or attractive models", but the article

25   does not support the conclusion that these forecasts should be used alone.

[12] Malkiel, Burton G. A Random Walk Down Wall Street. 2003. W.W. Norton & Co. New York. p. 175
[13] See Smith, Randall & Craig, Suzanne. "Big Firms Had Research Ploy: Quiet Payments Among Rivals." *The Wall Street Journal*. April 30, 2003. Brown, Ken. "Analysts: Still Coming Up Rosy." *The Wall Street Journal*. January 27, 2003. p. C1. Karmin, Craig. "Profit Forecasts Become Anybody's Guess." *The Wall Street Journal*. January 21, 2003. p. C1. Gasparino, Charles. "Merrill Lynch Investigation Widens." *The Wall Street Journal*. April 11, 2002. p. C4. Elstein, Aaron. "Earnings Estimates Are All Over the Map." *The Wall Street Journal*. August 2, 2001. p. C1. Dreman, David. "Don't Count on those Earnings Forecasts." *Forbes*. January 26, 1998. p. 110.
[14] Gordon, David A., Myron J. Gordon, Lawrence I. Gould. "Choice Among Methods of Estimating Share Yield." *The Journal of Portfolio Management*. Spring 1989. pp. 50-55. (Bourassa's direct testimony, page 29, footnote.)

1 Q.   **Does Professor Gordon recommend relying exclusively on analysts' forecasts as the**

2   **measure of growth in the DCF model?**

3 A.   No. Subsequent to the study cited by Mr. Bourassa,[15] Professor Gordon provided the

4   keynote address at the 30th Financial Forum of the Society of Utility and Regulatory

5   Financial Analysts, in which he stated:

6   I understand that companies coming before regulatory agencies
7   liked and advocated the high growth rates in security analyst
8   forecasts for arriving at their cost of equity capital. Instead of
9   rejecting these forecasts, I understand that FERC and other
10   regulatory agencies have decided to compromise with them. In
11   particular, in arriving at the cost of equity for company X, the
12   FERC has decided to arrive at the growth rate in my dividend
13   growth model by using an average of two growth rates. One is
14   security analysts forecast of the short-term growth rate in earnings
15   provided by IBES or Value Line and the other a more long run and
16   typically lower figure such as the past growth in GNP.

17   Such an average can be questioned on various grounds. However,
18   my judgment is that between the short-term forecast alone and its
19   average with the past growth rate in GNP, *the latter may be a more*
20   *reasonable figure.*[16] (Emphasis added)

21

22   Simply stated, Professor Gordon would temper the typically higher analysts' forecasts

23   with the typically lower GNP growth rate by averaging the two.

---

[15] Ibid.
[16] Gordon, M. J. Keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial
Analysts. May 8, 1998. Transparency 3.

1 Q.   **How does Staff respond to Mr. Bourassa's statement, "Logically, in estimating future**

2   **growth, financial institutions and analysts have taken into account all relevant**

3   **historical information on a company as well as other more recent information. To**

4   **the extent that past results provide useful indications of future growth prospects,**

5   **analysts' forecasts would already incorporate that information."?   (Bourassa's**

6   **Direct Testimony, Page 29, line 5-9)**

7 A.   The appropriate growth rate to use in the DCF formula is the dividend growth rate

8   expected by *investors*, not analysts.   Therefore, while analysts may have considered

9   historical measures of growth, it is reasonable to assume that investors rely to some extent

10   on past growth as well. This calls for consideration of both analysts' forecasts as well as

11   past growth.

12

13 Q.   **Does Staff have any comments on Mr. Bourassa's slight reliance on historical DPS**

14   **growth to estimate DPS growth constant growth DCF estimates?**

15 A.   Yes. As previously stated on section V of this testimony, the current market price of a

16   stock is equal to the present value of all expected future dividends, not future earnings.

17   Professor Jeremy Siegel from the Wharton School of Finance stated:

18

19   > Note that the price of the stock is always equal to the present value
20   > of all future *dividends* and not the present value of future earnings.
21   > Earnings not paid to investors can have value only if they are paid
22   > as dividends or other cash disbursements at a later date. Valuing
23   > stock as the present discounted value of future earnings is
24   > manifestly wrong and greatly overstates the value of the firm.[17]
25

26   In other words, investors pay attention to earnings as long as they are paid as dividends.

27   Earnings can easily be overstated. If investors do not receive dividends or other cash

28   disbursement at a later date, then such earnings are meaningless. Accordingly, historical

---

[17] Seigel, Jeremy J. Stocks for the Long Run. 2002. McGraw-Hill. New York. P. 93.

1   DPS growth should receive appropriate consideration in the estimation of DPS growth

2   component of the DCF cost of equity estimation model.

3

4   **Q.   Does Staff have any comment on data in Mr. Bourassa Schedule D-4.4 which he uses**

5   **to calculate a DCF dividend growth rate in his Past and Future DCF method?**

6   A.   Yes. Schedule D-4.4 presents calculations based on five years of historical data. Using

7   only five years of data could result in significant variances in the outcomes due to a single

8   high or low data point. A larger number of data points, i.e., use of more years, is usually

9   preferable. Also, five years may be too limited to capture a full business cycle, resulting

10   in unnecessary skewing of the outcomes.

11

12   **Firm-Specific Risk**

13   **Q.   Mr. Bourassa asserts that the Company "has 2-3 times as much zero-cost capital**

14   **(advances-in-aid of construction and contributions-in-aid of construction) in its**

15   **capitalization."[18] He further states "Ultimately, however, both types of zero cost**

16   **capital have detrimental impacts on the long-term cash flows of the Company.**

17   **Advanced plant and contributed plant still has to be maintained and eventually has**

18   **to be replaced. This places additional stress on earnings and increases risk to the**

19   **Company as the eventual plant replacements will require the Company to raise**

20   **additional capital to fund the replacements."[19] What is Staff's response?**

21   A.   Staff agrees that advanced and contributed plant should be properly maintained; however,

22   these repair and maintenance expenses are included in rates and paid by ratepayers, they

23   are not borne by the Company. Contrary to Mr. Bourassa's assertion, advances and

24   contributions provide many benefits to and are highly sought by utilities. Advances and

---

[18] Direct Testimony of Thomas J. Bourassa, Rio Rico Sewer Corporation, Docket No. WS-02676A-09-0257, page 18 lines 20-21

[19] Direct Testimony of Thomas J. Bourassa, Rio Rico Sewer Corporation, Docket No. WS-02676A-09-0257, page 19 lines 7-12

1   contributions allow utilities to postpone seeking capital funds to construct new facilities,

2   and provide long planning horizons for funding replacement plant. Refunding advances is

3   a mechanism allowing a utility to gradually and systematically provide capital funding for

4   plant as revenues permit. Thus, access to zero cost capital via advances and contributions

5   reduces a utility's firm-specific risk.

6

7   Q.   **Does Staff have any comment on Mr. Bourassa's statement that "Arizona water and**

8   **wastewater utilities face legal constraints that limit their ability to obtain rate relief**

9   **outside of a general rate case in which the 'fair value' of the utility's property is**

10 **determined and used to set rates?"[20]**

11 A.   Yes. The unique regulatory environments of the sample companies and Rio Rico are firm

12 specific risks for which investors cannot expect compensation. None of Mr. Bourassa's

13 comments demonstrate that Arizona is a less favorable regulatory environment from those

14 of the sample companies. Every regulatory jurisdiction has its own framework with its

15 own specific identifiable advantages and disadvantages; however, it is the overall effect

16 that is relevant. Nothing in Mr. Bourassa's testimony provides this overall perspective.

17 The fact that investors continue to acquire Arizona utilities and invest capital in Arizona

18 utilities debunks the notion that the regulatory environment in Arizona places utilities at

19 some disadvantage. The regulatory framework in Arizona has many attractive attributes

20 including: use of fair value rate base, ability to seek accounting orders, recognition of

21 known and measurable changes, wide use of hook-up fees and regulatory responsiveness

22 to utility industry concerns (e.g., arsenic cost recovery mechanisms and arsenic remedial

23 surcharge mechanisms).

---

[20] Direct Testimony of Thomas J. Bourassa, Rio Rico Sewer Corporation, Docket No. WS-02676A-09-0257, page 20 lines 14-17

1 Q.   **What is Staff's response to Mr. Bourassa's contention that the market data provided**

2   **by the sample water utilities does not capture all of the market risk associated with**

3   **Rio Rico due to Arizona regulatory requirements' use of historical test years and**

4   **limited out of period adjustment recognition?[21]**

5 A.   The examples cited by Mr. Bourassa are examples of firm-specific or unique risks.

6   Existence of firm-specific risk does not necessarily indicate that a company has more total

7   risk than others, as all companies have firm-specific risks. Moreover, as previously

8   discussed, the market does not compensate investors for firm-specific risk because it can

9   be eliminated through diversification.

10

11 Q.   **Does Staff have a response to Mr. Bourassa's citation that "in Chapter 7 of**

12   **Morningstar's Ibbotson SBBI 2009 Valuation Yearbook, for example, Ibbotson**

13   **reports that when betas are properly estimated, betas are larger for smaller**

14   **companies than for larger companies"[22]?**

15 A.   Yes. It is generally understood that smaller companies tend to have higher betas than

16   larger companies due to larger variations in earnings thus making the smaller companies

17   more risky.

---

[21] Direct Testimony of Thomas J. Bourassa, Rio Rico Sewer Corporation, Docket No. WS-02676A-09-0257, page 20
lines 21-22

[22] Direct Testimony of Thomas J. Bourassa, Rio Rico Sewer Corporation, Docket No. WS-02676A-09-0257, page 33
lines 2-5

1 Q. **What is Staff's response to Mr. Bourassa's contention that Rio Rico should receive a**

2 **higher cost of equity estimate because of its smaller size through a "small firm risk**

3 **premium"[23] and to his assertion that Rio Rico is not comparable to the six publicly**

4 **traded water utilities in the sample group due to a difference in size?[24]**

5 A. Staff does not agree that Rio Rico should be allowed a small firm risk premium. The

6 Commission has previously ruled that firm size does not warrant recognition of a risk

7 premium. In Decision No. 64282, dated December 28, 2001, for Arizona Water, the

8 Commission stated, "We do not agree with the Company's proposal to assign a risk

9 premium to Arizona Water based on its size relative to other publicly traded water

10 utilities...." In Decision No. 64727, dated April 17, 2002, for Black Mountain Gas, the

11 Commission agreed with Staff that "the 'firm size phenomenon' does not exist for

12 regulated utilities, and that therefore there is no need to adjust for risk for small firm size

13 in utility rate regulation."

14

15 **X. CONCLUSION**

16 Q. **Please summarize Staff's recommendations.**

17 A. Staff recommends that the Commission adopt a capital structure for Rio Rico in this

18 proceeding composed of 0.0 percent debt and 100.0 percent equity.

19

20 Staff also recommends that the Commission adopt a 9.2 percent ROR for the Applicant,

21 based on Staff's cost of equity estimates that range from 9.9 percent to 11.0 percent for the

22 sample companies and to reflect a 130 basis point downward financial risk adjustment.

23

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[23] Direct Testimony of Thomas J. Bourassa, Rio Rico Utilities, Inc., Docket No. WS-02676A-09-0257, page 38 lines 15-16
[24] Direct Testimony of Thomas J. Bourassa, Rio Rico Utilities, Inc., Docket No. WS-02676A-09-0257, page 21 lines 11-13

1   **Q.**   **Does this conclude your direct testimony?**

2   A.   Yes, it does.

Rio Rico Utilities Cost of Capital Calculation
Capital Structure
And Weighted Average Cost of Capital
Staff Recommended and Company Proposed

[A]	[B]	[C]	[D]
			Weighted
Description	Weight (%)	Cost	Cost
Staff Recommended Structure			
Debt	0.0%	0.0%	0.0%
Common Equity	100.0%	9.2%	9.2%
Weighted Average Cost of Capital			**9.2%**
Company Proposed Structure			
Debt	0.0%	0.0%	0.0%
Common Equity	100.0%	12.4%	12.4%
Weighted Average Cost of Capital			**12.4%**

[D]: [B] x [C]

Supporting Schedules: JCM-3 and JCM-4.

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Rio Rico Utilities Cost of Capital Calculation
Final Cost of Equity Estimates
Sample Water Utilities

[A]	[B]		[C]		[D]		[E]
DCF Method			D_1/P_0 [1]	+	g [2]	=	$\underline{k}$
Constant Growth DCF Estimate			3.7%	+	5.7%	=	9.4%
Multi-Stage DCF Estimate						=	10.3%
Average of DCF Estimates							9.9%
CAPM Method	Rf	+	β [5]	×	(Rp)	=	$\underline{k}$
Historical Market Risk Premium [3]	3.0%	+	0.80	×	6.9% [6]	=	8.6%
Current Market Risk Premium [4]	4.4%	+	0.80	×	11.1% [7]	=	13.3%
Average of CAPM Estimates							11.0%
					Average		10.5%
					Financial risk adjustment		-1.3%
					Total		9.2%

1 MSN Money and Value Line

2 Schedule JCM-8

3 Risk-free rate (Rf) for 5, 7, and 10 year Treasury rates from the U.S. Treasury Department at www.ustreas.gov

4 Risk-free rate (Rf) for 30 Year Treasury bond rate from the U.S. Treasury Department at www.ustreas.gov

5 Value Line

6 Historical Market Risk Premium (Rp) calculated from Ibbotson Associates SBBI 2009 Yearbook data

7 Testimony

Rio Rico Utilities Cost of Capital Calculation
Average Capital Structure of Sample Water Utilities

[A]	[B]	[C]	[D]
		Common	
Company	Debt	Equity	Total
American States Water	48.4%	51.6%	100.0%
California Water	47.9%	52.1%	100.0%
Aqua America	52.7%	47.3%	100.0%
Connecticut Water	50.7%	49.3%	100.0%
Middlesex Water	53.2%	46.8%	100.0%
SJW Corp	48.6%	51.4%	100.0%
Average Sample Water Utilities	50.2%	49.8%	100.0%
Rio Rico - Actual Capital Structure	0.0%	100.0%	100.0%

Source:
Sample Water Companies from Value Line

Rio Rico Utilities Cost of Capital Calculation
Growth in Earnings and Dividends
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]
	Dividends Per Share 1998 to 2008	Dividends Per Share Projected	Earnings Per Share 1998 to 2008	Earnings Per Share Projected
Company	DPS[1]	DPS[1]	EPS[1]	EPS[1]
American States Water	1.8%	4.6%	3.7%	10.9%
California Water	0.9%	2.8%	2.7%	6.9%
Aqua America	7.0%	5.0%	6.2%	11.4%
Connecticut Water	1.3%	No Projection	1.0%	No Projection
Middlesex Water	2.1%	No Projection	2.9%	No Projection
SJW Corp	5.5%	No Projection	3.0%	No Projection
Average Sample Water Utilities	3.1%	4.1%	3.3%	9.7%

1 Value Line

Rio Rico Utilities Cost of Capital Calculation
Sustainable Growth
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]
	Retention Growth 1999 to 2008 br	Retention Growth Projected br	Stock Financing Growth vs	Sustainable Growth 1999 to 2008 br + vs	Sustainable Growth Projected br + vs
Company					
American States Water	3.0%	6.4%	1.4%	4.4%	7.8%
California Water	2.0%	6.1%	3.9%	5.9%	10.0%
Aqua America	4.8%	5.7%	3.5%	8.3%	9.2%
Connecticut Water	2.6%	No Projection	0.8%	3.4%	No Projection
Middlesex Water	1.4%	No Projection	2.4%	3.8%	No Projection
SJW Corp	4.5%	No Projection	0.1%	4.6%	No Projection
Average Sample Water Utilities	3.0%	6.1%	2.0%	5.0%	9.0%

[B]: Value Line
[C]: Value Line
[D]: Value Line and MSN Money
[E]: [B]+[D]
[F]: [C]+[D]

Rio Rico Utilities Cost of Capital Calculation
Selected Financial Data of Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[G]
					Value Line	Raw
		Spot Price		Mkt To	Beta	Beta
Company	Symbol	11/4/2009	Book Value	Book	β	β raw
American States Water	AWR	32.84	17.75	1.8	0.80	0.67
California Water	CWT	35.75	20.13	1.8	0.75	0.60
Aqua America	WTR	15.71	8.22	1.9	0.65	0.45
Connecticut Water	CTWS	22.67	12.64	1.8	0.85	0.75
Middlesex Water	MSEX	15.58	10.93	1.4	0.80	0.67
SJW Corp	SJW	21.62	14.77	1.5	0.95	0.90
Average				1.7	0.80	0.67

[C]: Msn Money
[D]: Value Line
[E]: [C] / [D]
[F]: Value Line
[G]: (-0.35 + [F]) / 0.67

Rio Rico Utilities Cost of Capital Calculation
Calculation of Expected Infinite Annual Growth in Dividends
Sample Water Utilities

[A]   [B]

Description   g

DPS Growth - Historical[1]   3.1%
DPS Growth - Projected[1]   4.1%
EPS Growth - Historical[1]   3.3%
EPS Growth - Projected[1]   9.7%
Sustainable Growth - Historical[2]   5.0%
Sustainable Growth - Projected[2]   9.0%

Average   5.7%

1 Schedule JCM-5

2 Schedule JCM-6

Rio Rico Utilities Cost of Capital Calculation
Multi-Stage DCF Estimates
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[H]	[I]
	Current Mkt.	Projected Dividends[2] (Stage 1 growth) (D_t)				Stage 2 growth[3]	Equity Cost
Company	Price (P_o)[1] 11/4/2009	d_1	d_2	d_3	d_4	(g_n)	Estimate (K)[4]
American States Water	32.8	1.06	1.12	1.18	1.25	6.7%	9.8%
California Water	35.8	1.23	1.30	1.37	1.45	6.7%	10.0%
Aqua America	15.7	0.57	0.60	0.64	0.67	6.7%	10.2%
Connecticut Water	22.7	0.92	0.98	1.03	1.09	6.7%	10.7%
Middlesex Water	15.6	0.75	0.79	0.84	0.89	6.7%	11.4%
SJW Corp	21.6	0.69	0.73	0.77	0.81	6.7%	9.8%

Average   10.3%

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)} \right]^n$$

Where : P_0 = current stock price

D_t = dividends expected during stage 1

K = cost of equity

n = years of non − constant growth

D_n = dividend expected in year n

g_n = constant rate of growth expected after year n

1 [B] see Schedule JCM-7
2 Derived from Value Line Information
3 Average annual growth in GDP 1929 - 2008 in current dollars.
4 Internal Rate of Return of Projected Dividends

BEFORE THE ARIZONA CORPORATION COMMISSION

KRISTIN K. MAYES
     Chairman
GARY PIERCE
     Commissioner
PAUL NEWMAN
     Commissioner
SANDRA D. KENNEDY
     Commissioner
BOB STUMP
     Commissioner

IN THE MATTER OF THE APPLICATION OF) RIO RICO UTILITIES, INC. FOR A) DETERMINATION OF THE FAIR VALUE) OF ITS UTILITY PLANT AND PROPERTY) AND FOR INCREASES IN ITS WATER AND) WASTEWATER RATES AND CHARGES FOR) UTILITY SERVICE THEREON.) _____)	DOCKET NO. WS-02676A-09-0257

DIRECT

TESTIMONY

OF

JIAN W. LIU

UTILITIES ENGINEER

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

DECEMBER 15, 2009

TABLE OF CONTENTS

EXHIBITS

1 **INTRODUCTION**

2 **Q.** **Please state your name and business address.**

3 A. My name is Jian W. Liu. My business address is 1200 West Washington Street, Phoenix,

4 Arizona 85007.

5

6 **Q.** **By whom and in what position are you employed?**

7 A. I am employed by the Arizona Corporation Commission ("Commission" or "ACC") as a

8 Utilities Engineer - Water/Wastewater in the Utilities Division.

9

10 **Q.** **How long have you been employed by the Commission?**

11 A. I have been employed by the Commission since October 2005.

12

13 **Q.** **What are your responsibilities as a Utilities Engineer - Water/Wastewater?**

14 A. My main responsibilities are to inspect, investigate and evaluate water and wastewater

15 systems. This includes obtaining data, preparing reconstruction cost new and/or original

16 cost studies, investigative reports, interpreting rules and regulations, and to suggest

17 corrective action and provide technical recommendations on water and wastewater system

18 deficiencies. I also provide written and oral testimony in rate cases and other cases before

19 the Commission.

20

21 **Q.** **How many companies have you analyzed for the Utilities Division?**

22 A. I have analyzed more than 40 companies fulfilling these various responsibilities for

23 Utilities Division Staff ("Staff").

24

25 **Q.** **Have you previously testified before this Commission?**

26 A. Yes, I have testified on numerous occasions before this Commission.

1   **Q.**   **What is your educational background?**

2   A.   I am a Ph.D. Candidate in Geotechnical Engineering from Arizona State University

3   ("ASU"). I have a Master of Science Degree in Natural Science from ASU and a Master

4   of Science Degree in Civil Engineering from Institute of Rock & Soil Mechanics

5   ("IRSM"), Academy of Sciences, China.

6

7   **Q.**   **Briefly describe your pertinent work experience.**

8   A.   From 1982 to 2000, I was employed by IRSM, SCS Engineers, and URS Corporation as a

9   Civil and Environmental Engineer. In 2000, I joined the Arizona Department of

10   Environmental Quality ("ADEQ"). My responsibilities with ADEQ included review and

11   approval of water distribution systems, sewer distribution systems, and on-site wastewater

12   treatment facilities. I remained with ADEQ until transferring to the Commission in

13   October 2005.

14

15   **Q.**   **Please state your professional membership, registrations, and licenses.**

16   A.   I am a licensed professional civil engineer in the State of Arizona.

17

18 **PURPOSE OF TESTIMONY**

19   **Q.**   **What was your assignment in this rate proceeding?**

20   A.   My assignment was to provide Staff's engineering evaluation of the subject rate

21   proceeding. I reviewed the Company's application and responses to data requests, and I

22   inspected the water and wastewater systems. This testimony and its attachments present

23   Staff's engineering evaluation. The findings of my engineering evaluation are contained

24   in the Engineering Reports that I have prepared for this proceeding. The reports are

25   included as Exhibits JWL-1 and JWL-2 in this pre-filed testimony.

ENGINEERING REPORTS

Q.   Please describe the information contained in your Engineering Reports.

A.   The Reports are divided into three general sections: 1) *Executive Summary*;
2) *Engineering Report Discussion*, and 3) *Engineering Report Exhibits*. The *Discussions*
section for Water System can be further divided into ten subsections: A) Location of
Company; B) Description of the Water System; C) Maricopa County Environmental
Services Department ("MCESD") Compliance or ADEQ Compliance; D) ACC
Compliance; E) Arizona Department Of Water Resources ("ADWR") compliance; F)
Water Testing Expenses, G) Water Usage, H) Growth; I) Depreciation Rates; J) Other
Issues. The *Discussions* section for Wastewater System is divided into eight subsections:
A) Location of Company; B) Description of the Wastewater System; C) Wastewater Flow;
D) Growth; E) ADEQ Compliance; F) ACC Compliance; G) Depreciation Rates; H) Other
Issues.

RECOMMENDATIONS AND CONCLUSIONS

**Q.   What are Staff's conclusions and recommendations regarding the Company's
operations?**

A.   Staff's conclusions and recommendations regarding the Company's operations are listed
below.

Rio Rico Utilities, Inc. - Water

CONCLUSIONS:

1. ADEQ regulates The Rio Rico Utilities, Inc. ("Rio Rico Utilities" or "Companies") Water
    System under ADEQ Public Water System ("PWS") No. 12-011. Based on compliance
    information submitted by the Company, the system has no deficiencies and ADEQ has
    determined that the system is currently delivering water that meets water quality standards
    required by Arizona Administrative Code, Title 18, and Chapter 4. (ADEQ report dated
    June 3, 09).

2. Rio Rico Utilities is located within the Santa Cruz Active Management Area ("AMA") and is subject to its AMA reporting and conservation requirements. Staff received an ADWR compliance status report in November 2009. ADWR reported that Rio Rico Utilities is currently in compliance with departmental requirements governing water providers and/or community water systems.

3. Staff concludes that the Rio Rico Utilities has adequate production capacity and storage capacity to serve the existing customer base and reasonable growth.

4. A check with the Utilities Division Compliance Section showed no delinquent compliance items for Rio Rico Utilities.

5. Rio Rico Utilities has approved Curtailment Plan and Backflow Prevention Tariffs on file with the Commission.

6. Staff can <u>not</u> conclude that the proposed Hook Up Fee Tariff ("HUF") tariff is reasonable and appropriate.

7. The Company reported 855,207,000 gallons pumped and 767,792,000 gallons sold (and used), resulting in a water loss of 10.22% for 2008.

RECOMMENDATIONS:

1. Staff recommends that Rio Rico Utilities use Staff's depreciation rates by individual National Association of Regulatory Utility Commissioners ("NARUC") category as delineated in Table B of Exhibit JWL-1.

2. Staff recommends the annual water testing expense of $27,451 reported by the Company be used for purposes of this application.

3. Staff recommends that the adoption of an installation charge of "At Cost" for all meter sizes as delineated in Table C of Exhibit JWL-1.

4. Staff recommends that the Company file with Docket Control, as a compliance item in this docket, a detailed plan demonstrating how the Company will reduce its water loss to less than 10 percent. If the Company finds that reduction of water loss to less than 10 percent is not cost-effective, the Company should submit a detailed cost analysis and explanation demonstrating why water loss reduction to less than 10 percent is not cost-effective. In any event water loss shall not exceed 15 percent. The water loss reduction plan or the detailed cost analysis, whichever is submitted, shall be docketed as a compliance item within 90 days of a Decision in this matter.

5. Staff recommends the proposed HUF tariff be denied.

1   *Rio Rico Utilities, Inc. - Wastewater*

2

3   **CONCLUSIONS:**

4

5   1. ADEQ regulates the Rio Rico Utilities wastewater treatment plant under Permit
6   No. 14919. Per the November 12, 2009 Compliance Status Reports issued by ADEQ, the
7   system is in compliance with ADEQ requirements.

8

9   2. A check with the Utilities Division Compliance Section showed no delinquent compliance
10   items. (ACC Compliance Section Email dated 11/13/09).

11

12   3. Staff can <u>not</u> conclude that the proposed HUF tariff is reasonable and appropriate.

13

14   4. Staff concludes that Rio Rico Utilities has adequate treatment capacity to serve the
15   existing customer base and reasonable growth.

16

17

18   **RECOMMENDATIONS:**

19

20   1. It is recommended that the Company use the depreciation rates presented in Table G-1 by
21   individual NARUC category.

22

23   2. Staff recommends adoption of an installation charge of "At Cost" for all service line sizes
24   as delineated in Table C of Exhibit JWL-2.

25

26   3. Staff recommends the proposed HUF tariff be denied.

27

28   **Q.   Does this conclude your Direct Testimony?**

29   A.   Yes, it does.

EXHIBIT JWL-1

ENGINEERING REPORT FOR

RIO RICO UTILITIES, INC. - WATER

DOCKET NO. WS-02676A-09-0257 (RATES)

JIAN W LIU

DECEMBER 15, 2009

Engineering Report for:
Rio Rico Utilities, Inc.
Docket No. WS-02676A-09-0257 (Rates)

By: Jian W Liu
Utilities Engineer

December 15, 2009

EXECUTIVE SUMMARY

CONCLUSIONS:

1. Arizona Department of Environmental Quality ("ADEQ") regulates Rio Rico Utilities, Inc. ("Rio Rico Utilities" or "Company")'s Water System under ADEQ Public Water System ("PWS") No. 12-011. Based on compliance information submitted by the Company, the system has no deficiencies and ADEQ has determined that the system is currently delivering water that meets water quality standards required by Arizona Administrative Code, Title 18, and Chapter 4. (ADEQ report dated June 3, 09).

2. Rio Rico Utilities is located within the Santa Cruz Active Management Area ("AMA") and is subject to its AMA reporting and conservation requirements. Staff received an Arizona Department of Water Resources ("ADWR") compliance status report in November 2009. ADWR reported that Rio Rico Utilities is currently in compliance with departmental requirements governing water providers and/or community water systems.

3. Staff concludes that the Rio Rico Utilities has adequate production capacity and storage capacity to serve the existing customer base and reasonable growth.

4. A check with the Utilities Division Compliance Section showed no delinquent compliance items for Rio Rico Utilities.

5. Rio Rico Utilities has approved Curtailment Plan and Backflow Prevention Tariffs on file with the Commission.

6. Staff can <u>not</u> conclude that the proposed Hook Up Fee ("HUF") tariff is reasonable and appropriate.

7. The Company reported 855,207,000 gallons pumped and 767,792,000 gallons sold (and used), resulting in a water loss of 10.22% for 2008.

RECOMMENDATIONS

1. Staff recommends that Rio Rico Utilities use Staff's depreciation rates by individual National Association of Regulatory Utility Commissioners ("NARUC") category as delineated in Table B of Exhibit JWL-1.

2. Staff recommends the annual water testing expense of $27,451 reported by the Company be used for purposes of this application.

3. Staff recommends that the adoption of an installation charge of "At Cost" for all meter sizes as delineated in Table C of Exhibit JWL-1.

4. Staff recommends that the Company file with Docket Control, as a compliance item in this docket, a detailed plan demonstrating how the Company will reduce its water loss to less than 10 percent. If the Company finds that reduction of water loss to less than 10 percent is not cost-effective, the Company should submit a detailed cost analysis and explanation demonstrating why water loss reduction to less than 10 percent is not cost-effective. In any event water loss shall not exceed 15 percent. The water loss reduction plan or the detailed cost analysis, whichever is submitted, shall be docketed as a compliance item within 90 days of a Decision in this matter.

5. Staff recommends the proposed HUF tariff be denied.

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FIGURES

A.   LOCATION OF COMPANY

Rio Rico Utilities, Inc. ("Rio Rico Utilities" or "Company") is an Arizona public service corporation authorized to provide water and wastewater service within portions of Santa Cruz County, Arizona.   On May 21, 2009, the Company filed an application with the Arizona Corporation Commission ("Commission" or "ACC") to increase its rates for water service. Rio Rico Utilities provided water service to 6,605 customers as of the test year ending December 31, 2008. Figure 1 shows the location of Rio Rico Utilities within Santa Cruz County and Figure 2 shows the certificated area.

B.   DESCRIPTION OF THE WATER SYSTEM

The plant facilities were visited on November 5, 2009, by Jian Liu, Staff Utilities Engineer, in the accompaniment of Martin Garlant, and Dara Mora of the Company.

The drinking water system serving the community of Rio Rico is divided geographically by the Santa Cruz River, which runs south to north. Twelve inch and sixteen inch transmission mains cross the Santa Cruz River and allow the east and west sections of the water system to operate as a single unit. The terrain is very hilly and consequently the water system is divided into seven pressure zones at 150 feet intervals and dotted with about 26 small pressure tank and booster stations, which are in addition to the major pumping and storage facilities. Six groundwater wells provide the water source and feed into a lower pressure zone. All groundwater is disinfected with elemental chlorine. Staff concludes that Rio Rico Utilities has adequate production capacity and storage capacity to serve the existing customer base and reasonable growth.

(Tabular Description of Water System)

Well Data (active wells only)

ADWR ID No.	Pump HP	Pump GPM	Casing Depth(ft)	Casing Size(in)	Meter Size(in)	Year Drilled
55- 502579	200	1100	650	16	8	1983
55- 619359	75	625	250	10	6	1985
55- 604364	75	625	251	10	6	1968
55- 604363	75	650	603	12	8	1970
55- 587292	200	975	605	16	10	2003
55- 206176	250	1300	650	16	10	2005

Note: GPM = gallons per minute.

Storage Tanks		Pressure Tanks		Booster Pumps	
Capacity (gallons)	Quantity	Capacity (gallons)	Quantity	Capacity (HP)	Quantity
640,000	1	8,000	1	40	2
200,000	1	5,000	11	30	8
150,000	1	3,000	1	25	13
100,000	1	1,500	4	20	8
10,000	4	1,000	5	15	10
1,000,000	1	200	4	10	3
				7.5	9
Total 2,130,000				3	2

Mains		Customer Meters		Fire Hydrants
Size (inches)	Length (feet)	Size (inches)	Quantity	Quantity
4 and Under	325,458	5/8x3/4	6053	315
Over 4	1,478,264	3/4	8	
		1	86	
		1.5	18	
		2	49	
		3	18	
		4	5	
		6	2	
		Total	6,239	

C. ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY COMPLIANCE ("ADEQ")

ADEQ regulates the Company's Water System under ADEQ Public Water System ("PWS") #12-011. Based on compliance information submitted by the Company, the system has no deficiencies and ADEQ has determined that the system is currently delivering water that meets water quality standards required by Arizona Administrative Code, Title 18, and Chapter 4. (ADEQ report dated June 3, 2009).

D. ARIZONA CORPORATION COMMISSION ("ACC") COMPLIANCE

A check with the Utilities Division Compliance Section showed no delinquent compliance items for the Company.

**E.   ARIZONA   DEPARTMENT   OF   WATER   RESOURCES   ("ADWR")
COMPLIANCE**

Rio Rico Utilities is located within the Santa Cruz Active Management Area ("AMA")
and is subject to its AMA reporting and conservation requirements. Staff received an ADWR
compliance status report in November 2009. ADWR reported that Rio Rico Utilities is currently
in compliance with departmental requirements governing water providers and/or community
water systems.

F.   WATER TESTING EXPENSES

The Company reported a total water testing expense of $27451 during the test year, and
provided the expenses in tabular form as follows. Staff reviewed these expenses and supporting
documentation provided by the Company. Staff recommends the Company's reported annual
water testing expense of $27451 be used for purposes of this application.

Table A. Water Testing Cost

Sum of Debit Amount		
Originating Master Name	TRX Date	Total
Daniel A. Perra dba Desert Delivery Service	11/18/2008	102
	12/11/2008	34
Daniel A. Perra dba Desert Delivery Service Total		136
Desert Delivery Service	1/29/2008	470
	3/5/2008	105
	3/12/2008	25
	3/18/2008	25
	3/24/2008	90
	8/26/2008	588
	9/23/2008	187
	11/18/2008	119
	12/16/2008	34
Desert Delivery Service Total		1643
Turnor Laboratories, Inc	1/21/2008	150
	1/23/2008	7866
	1/28/2008	3881
	1/29/2008	150
	2/21/2008	150

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	Date	Amount
	2/27/2008	150
	3/12/2008	40
	3/25/2008	75
	4/1/2008	2575
	4/17/2008	1020
	4/25/2008	150
	5/13/2008	150
	5/22/2008	150
	6/3/2008	150
	6/12/2008	80
	6/18/2008	1020
	6/24/2008	150
	7/8/2008	285
	7/17/2008	150
	7/29/2008	150
	8/13/2008	150
	8/22/2008	150
	9/12/2008	75
	9/16/2008	150
	9/25/2008	5600
	10/24/2008	300
	11/13/2008	80
	11/24/2008	150
	12/16/2008	150
	12/17/2008	75
	12/22/2008	150
	12/29/2008	150
Turnor Laboratories, Inc Total		25672
Grand Total		**27451**

G.   WATER USE

Water Sold

Based on the information provided by the Company, water use for the year 2008 is presented below. The high monthly domestic water use was 446 gal/day per service connection in June and the low monthly domestic water use was 238 gal/day per service connection in March. The average annual use was 310 gal/day per service connection.
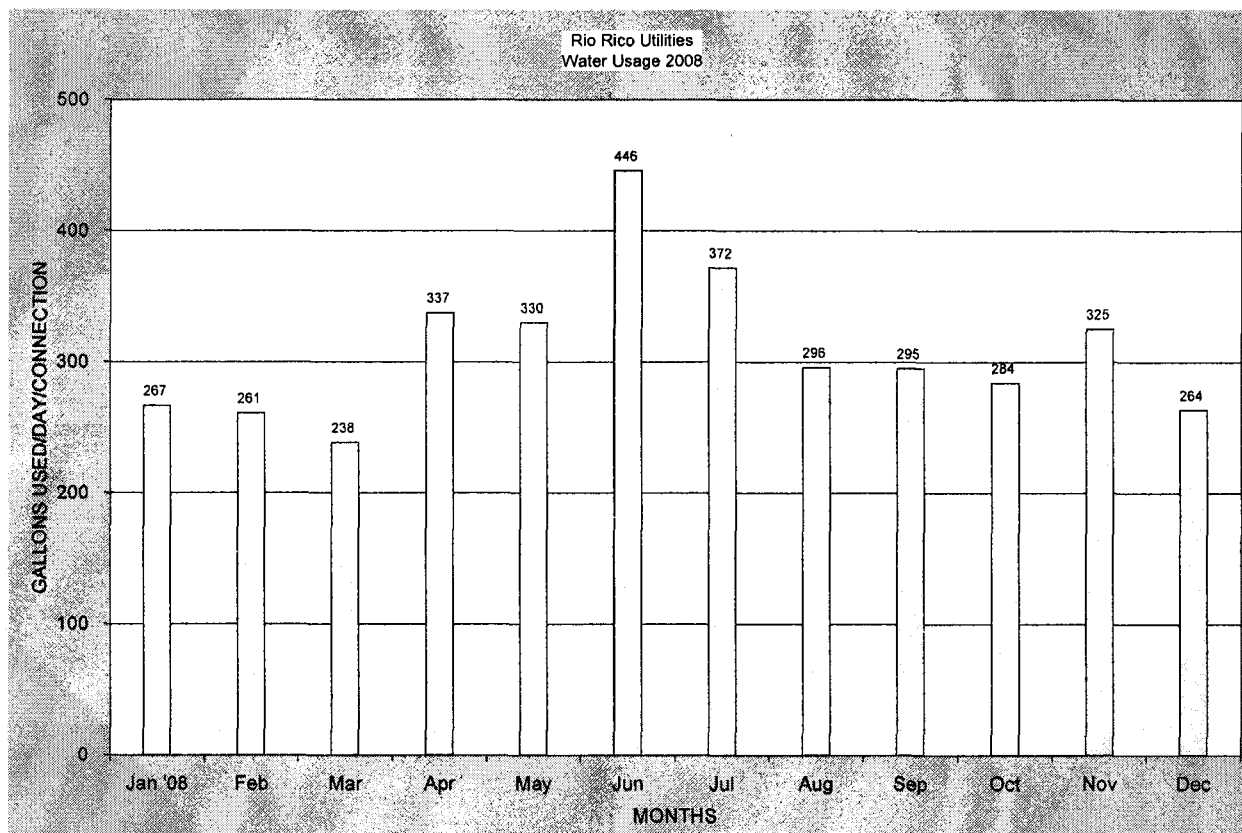
Non-account Water

Non-account water should be 10% or less and never more than 15%. It is important to be able to reconcile the difference between water sold and the water produced by the source. A water balance will allow a water company to identify water and revenue losses due to leakage, theft, and flushing. The Company reported 855,207,000 gallons pumped and 767,792,000 gallons sold (and used), resulting in a water loss of 10.22% for 2008.

Staff recommends that the Company file with Docket Control, as a compliance item in this docket, a detailed plan demonstrating how the Company will reduce its water loss to less than 10 percent. If the Company finds that reduction of water loss to less than 10 percent is not cost-effective, the Company should submit a detailed cost analysis and explanation demonstrating why water loss reduction to less than 10 percent is not cost-effective. In any event water loss shall not exceed 15 percent. The water loss reduction plan or the detailed cost analysis, whichever is submitted, shall be docketed as a compliance item within 90 days of a Decision in this matter.

H.   GROWTH

This Company experienced average annual growth rates of 8% from 1995 to 2007. In this changing economic climate it is hard for Staff to predict what level of growth is reasonable. The Company estimates a much lower growth rate in the area, as a result of the economic down-turn in the economy. The company expects the customer base to grow at approximately 1% per year for the next five years.

I.   DEPRECIATION RATES

Staff recommends that Rio Rico Utilities use Staff's depreciation rates by individual National Association of Regulatory Utility Commissioners category as delineated in Table B of Exhibit JWL-1.

Table B. Depreciation Rates

NARUC Acct. No.	Depreciable Plant	Average Service Life (Years)	Annual Accrual Rate (%)
304	Structures & Improvements	30	3.33
305	Collecting & Impounding Reservoirs	40	2.50
306	Lake, River, Canal Intakes	40	2.50
307	Wells & Springs	30	3.33
308	Infiltration Galleries	15	6.67
309	Raw Water Supply Mains	50	2.00
310	Power Generation Equipment	20	5.00
311	Pumping Equipment	8	12.5
320	Water Treatment Equipment		
320.1	Water Treatment Plants	30	3.33
320.2	Solution Chemical Feeders	5	20.0
330	Distribution Reservoirs & Standpipes		
330.1	Storage Tanks	45	2.22
330.2	Pressure Tanks	20	5.00
331	Transmission & Distribution Mains	50	2.00
333	Services	30	3.33
334	Meters	12	8.33
335	Hydrants	50	2.00
336	Backflow Prevention Devices	15	6.67
339	Other Plant & Misc Equipment	15	6.67
340	Office Furniture & Equipment	15	6.67
340.1	Computers & Software	5	20.00
341	Transportation Equipment	5	20.00
342	Stores Equipment	25	4.00
343	Tools, Shop & Garage Equipment	20	5.00
344	Laboratory Equipment	10	10.00
345	Power Operated Equipment	20	5.00
346	Communication Equipment	10	10.00
347	Miscellaneous Equipment	10	10.00
348	Other Tangible Plant	----	----

NOTES:

1. These depreciation rates represent average expected rates. Water companies may experience different rates due to variations in construction, environment, or the physical and chemical characteristics of the water.

2. Acct. 348, Other Tangible Plant may vary from 5% to 50%. The depreciation rate would be set in accordance with the specific capital items in this account.

J.   CURTAILMENT PLAN AND BACKFLOW PREVENTION TARIFF

Rio Rico Utilities has approved Curtailment Plan and Backflow Prevention Tariffs on file with the Commission.

K.   METER AND SERVICE LINE INSTALLATION CHARGES

The Company requested permission to change its service line and meter installation charges. These charges are refundable advances and the Company proposes that all Service Line installation charges be at "cost," as opposed to the current stated rates of between $370 and $1,630 based on meter size. The reason for this request is that the Company is finding the actual cost of installation far exceeds the existing tariff amounts, and can vary widely based upon the length of the line installation.

Because the water service area of Rio Rico Utilities is very hilly and because installation costs can vary widely, Staff recommends adoption of an installation charge of "At Cost" for all meter sizes as delineated in Table C of Exhibit JWL-1.

Table C. Service Line and Meter Installation Charges

Meter Size	Current Service Line Charges	Current Meter Charges	Current **Total** Charges	Proposed Service Line Charges	Proposed[1] Meter Charges	Proposed **Total** **Charges**
5/8 x3/4-inch	370	130	$500	At Cost	At Cost	At Cost
3/4-inch	370	205	$575	At Cost	At Cost	At Cost
1-inch	420	240	$660	At Cost	At Cost	At Cost
1-1/2-inch	450	450	$900	At Cost	At Cost	At Cost
2-inch	580	$1,640	$2,220	At Cost	At Cost	At Cost
3-inch	765	$2,195	$2,960	At Cost	At Cost	At Cost
4-inch	1,120	$3,145	$4,265	At Cost	At Cost	At Cost
6-inch	1,630	$6,120	$7,750	At Cost	At Cost	At Cost
8-inch & Larger	At Cost	At Cost	At Cost	At Cost	At Cost	At Cost

(1). Meter charge includes meter box or vault.

L.   Proposed Hook Up Fee Tariff

Rio Rico Utilities proposed the establishment of a hook-up fee ("HUF") tariff in this rate application. The Company proposed an $1,800 hook-up fee per new 5/8" x 3/4" meter service connection The Company however has not provided documentation to support its proposed HUF fee amounts.

In order to calculate hook-up fees, and determine if proposed water plant items benefit the entire water system, Staff sent a Data Request to the Company on July 10, 2009. The Company refused to provide any documentation to support this proposed HUF tariffs. Therefore, Staff can not conclude that the proposed HUF tariffs are reasonable and appropriate. Therefore Staff recommends the proposed HUF tariff be denied.
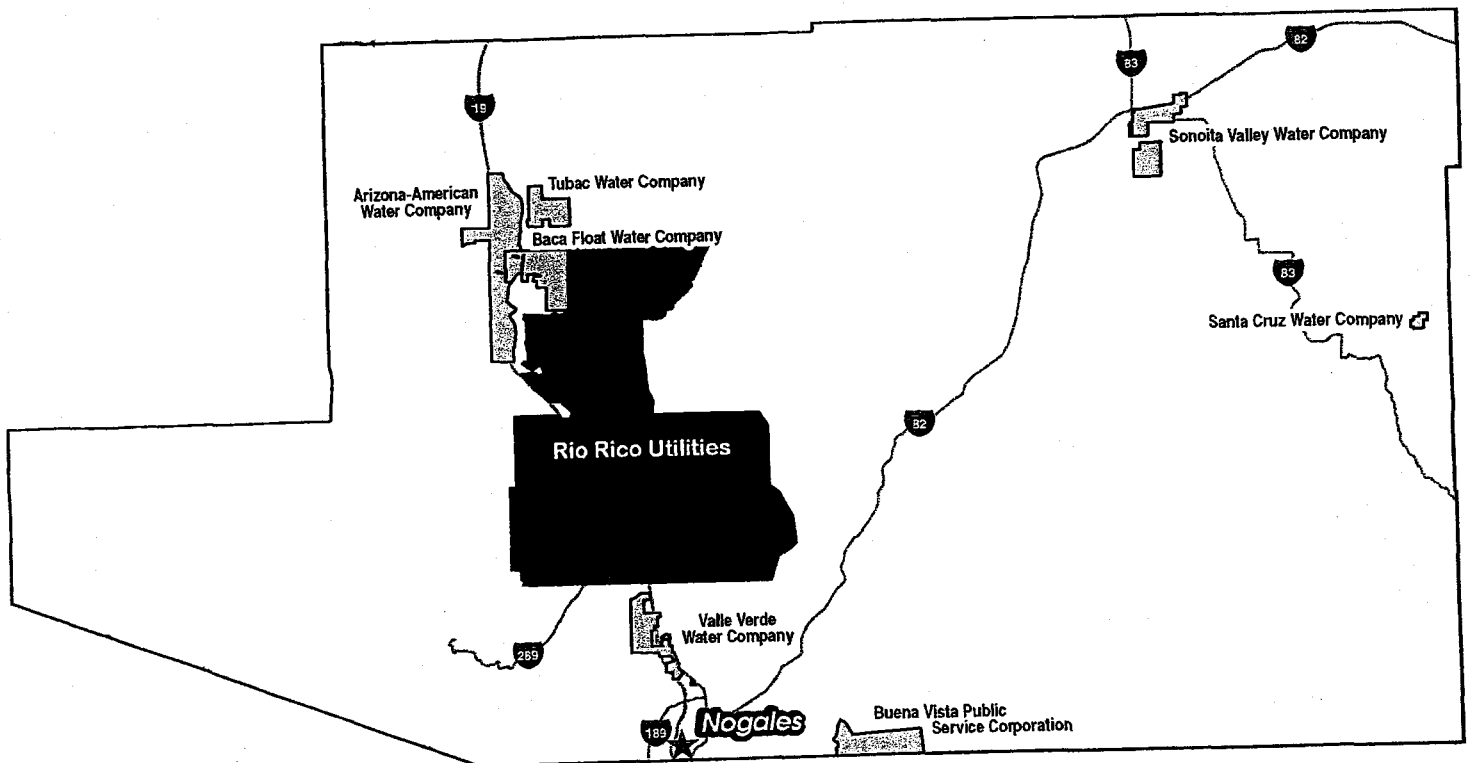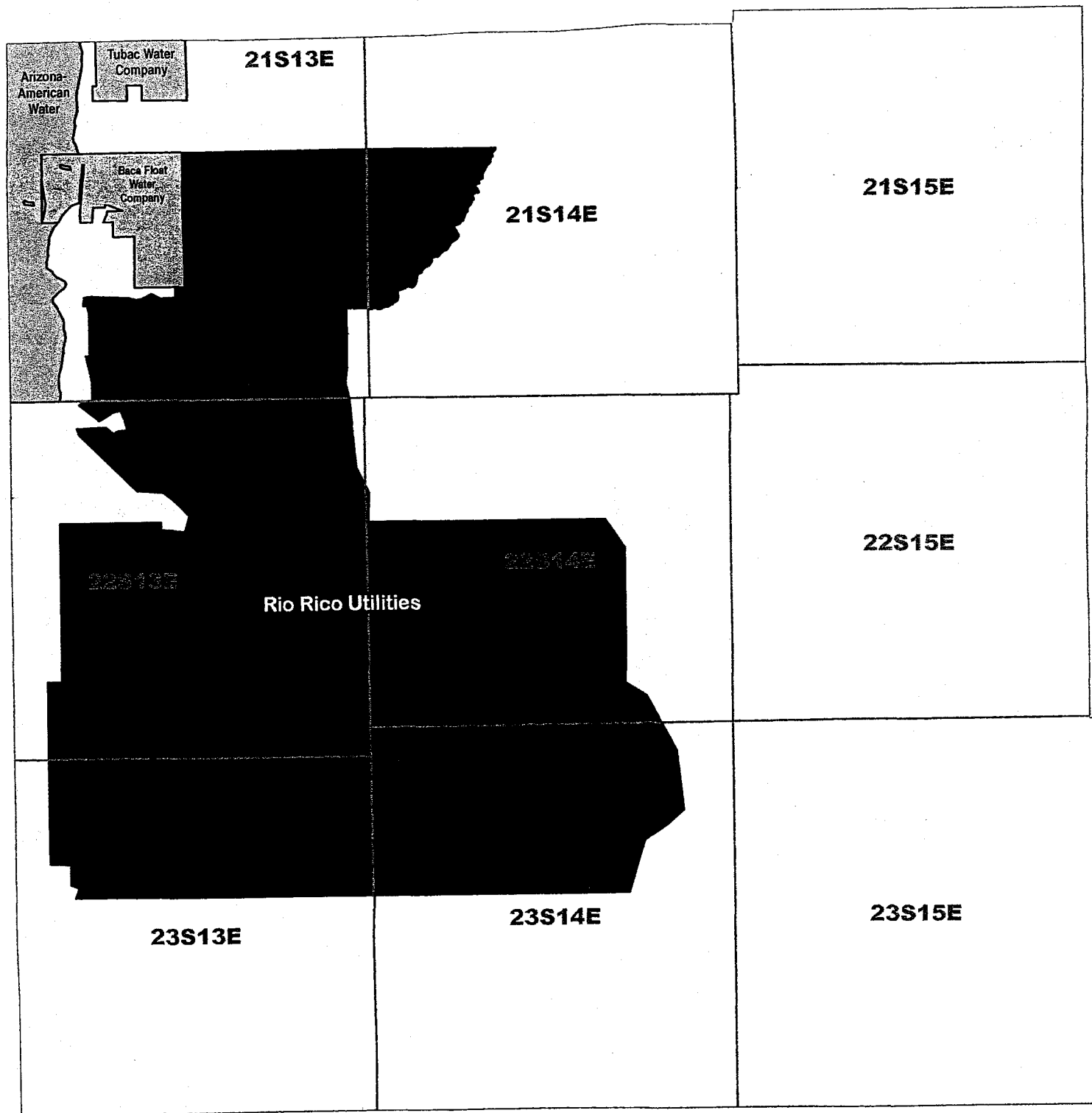
Figure 1: County Map

SANTA CRUZ COUNTY

Figure 2: Certificated Area

EXHIBIT JWL-2

ENGINEERING REPORT FOR

RIO RICO UTILITIES, INC. - WASTEWATER

DOCKET NO. WS-02676A-09-0257 (RATES)

JIAN W LIU
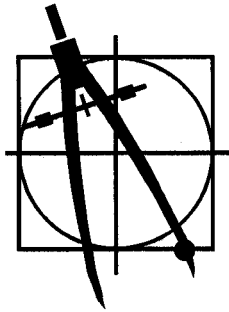
DECEMBER 15, 2009

Engineering Report
Rio Rico Utilities, Inc.
Docket No. WS-02676A-09-0257
(Rates)

By Jian W Liu

December 15, 2009

EXECUTIVE SUMMARY

CONCLUSIONS:

1. Arizona Department of Environmental Quality ("ADEQ") regulates the Rio Rico Utilities wastewater treatment plant under Permit No. 14919. Per the November 12, 2009 Compliance Status Reports issued by ADEQ, the system is in compliance with ADEQ requirements.

2. A check with the Utilities Division Compliance Section showed no delinquent compliance items. (ACC Compliance Section Email dated 11/13/09).

3. Staff can not conclude that the proposed Hook Up Fee ("HUF") tariff is reasonable and appropriate.

4. Staff concludes that Rio Rico Utilities has adequate treatment capacity to serve the existing customer base and reasonable growth.

RECOMMENDATIONS:

1. It is recommended that the Company use the depreciation rates presented in Table G-1 by individual National Association of Regulatory Utility Commissioners ("NARUC") category.

2. Staff recommends adoption of an installation charge of "At Cost" for all service line sizes as delineated in Table C of Exhibit JWL-2.

3. Staff recommends the proposed HUF tariff be denied.

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FIGURES

A.   LOCATION OF COMPANY

Rio Rico Utilities, Inc. ("Rio Rico Utilities" or "Company") is an Arizona public service corporation authorized to provide water and wastewater service within portions of Santa Cruz County, Arizona. On May 21, 2009, the Company filed an application with the Arizona Corporation Commission ("Commission" or "ACC") to increase its rates for wastewater service. Rio Rico Utilities provided wastewater service to approximately 2,300 customers as of the test year ending December 31, 2008. Figure 1 shows the location of Rio Rico Utilities within Santa Cruz County and Figure 2 shows the certificated area.

B.   DESCRIPTION OF THE WASTEWATER SYSTEM

The plant facilities were visited on November 5, 2009, by Jian Liu, Staff Utilities Engineer, in the accompaniment of Martin Garlant, and Dara Mora of the Company.

There are two separate wastewater systems. The major wastewater system consists of collection mains and 5 large pumping stations. The wastewater from the last pumping station enters the City of Nogales sewerage collection system where it co-mingles and eventually reaches the Nogales International wastewater treatment facility. The Nogales International treatment plant is owned and operated by the Unites States International Boundary and Water Commission. The City of Nogales pays fixed and commodity charges for the use of the international facility. Rio Rico then sub-contracts with the City of Nogales for capacity in the international facility and pays sewer use fees directly to the City of Nogales.

There is also a small wastewater system which serves the "Villas Unit 12" subdivision. It consists of a single pumping station and an aerobic stabilization pond. This facility serves about 140 customers.

Lift Station

Location	Quantity of Pumps	Horsepower per Pump	Capacity per Pump (GPM)	Wet Well Capacity (gals.)
Lift Station # 1	2	88	725	32,313
Lift Station # 2	2	47	500	9,000
Lift Station # 3	2	47	500	9,000
Lift Station # 4	2	15	175	8,000
Lift Station # 5	2	3	27	1,608

Manholes

Type	Quantity
Standard	535
Drop	15

Force Mains

Size	Material	Length (Feet)
4-inch	PVC	3,714
4-inch	DI	120
6-inch	PVC	19,946
6-inch	DI	693

Cleanouts

Quantity
132

Collection Mains

Diameter	Length (Feet)
4-inch	2,845
6-inch	11,273
8-inch	216,971
10-inch	12,340
12-inch	14,554
14-inch	3,060
16-inch	494
18-inch	170

Service Laterals

Diameter	Material	Length (Feet)
4-inch	Various	1,556
6-inch	Various	324
8-inch	PVC	1
	Total:	1,881

C.   WASTEWATER FLOW

Based on the information provided by the Company, wastewater flow for the year 2008 is presented in Figure 3. Customers experienced a high monthly average wastewater flow of 212 GPD per connection and a low monthly average wastewater flow of 181 GPD per connection for an average annual wastewater flow of 196 GPD per connection.

Staff concludes that Rio Rico Utilities has adequate treatment capacity to serve the existing customer base and reasonable growth.

D.   GROWTH

This Company experienced average annual growth rates of 6% from 1995 to 2007. In this changing economic climate it is hard for Staff to predict what level of growth is reasonable. The Company estimates a much lower growth rate in the area, as a result of the economic down-turn in the economy. The company expects the customer base to grow at approximately 1% per year for the next five years.

E.   ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY ("ADEQ") COMPLIANCE

ADEQ regulates the Rio Rico Utilities wastewater treatment plant under Permit No. 14919. Per the November 12, 2009 Compliance Status Reports issued by ADEQ, the system is in compliance with ADEQ requirements.

F.   ARIZONA CORPORATION COMMISSION ("ACC") COMPLIANCE

A check with the Utilities Division Compliance Section showed no delinquent compliance items. (ACC Compliance Section Email dated 11/13/09).

G.   DEPRECIATION RATES

In recent orders, the Commission has been shifting away from the use of composite depreciation rates in favor of individual depreciation rates by National Association of Regulatory Utility Commissioners ("NARUC") category. (For example, a uniform 2.50% composite rate would not really be appropriate for either vehicles or transmission mains and instead, different specific retirement rates should be used.)

Staff has developed typical and customary depreciation rates within a range of anticipated equipment life. These rates are presented in Table G-1 and it is recommended that the Company use these depreciation rates by individual NARUC category.

Table G-1. Wastewater Depreciation Rates

NARUC Acct. No.	Depreciable Plant	Average Service Life (Years)	Annual Accrual Rate (%)
354	Structures & Improvements	30	3.33
355	Power Generation Equipment	20	5.00
360	Collection Sewers – Force	50	2.0
361	Collection Sewers- Gravity	50	2.0
362	Special Collecting Structures	50	2.0
363	Services to Customers	50	2.0
364	Flow Measuring Devices	10	10.0
365	Flow Measuring Installations	10	10.00
366	Reuse Services	50	2.00
367	Reuse Meters & Meter Installations	12	8.33
370	Receiving Wells	30	3.33
371	Pumping Equipment	8	12.50
374	Reuse Distribution Reservoirs	40	2.50
375	Reuse Transmission & Distribution System	40	2.50
380	Treatment & Disposal Equipment	20	5.0
381	Plant Sewers	20	5.0
382	Outfall Sewer Lines	30	3.33
389	Other Plant & Miscellaneous Equipment	15	6.67
390	Office Furniture & Equipment	15	6.67
390.1	Computers & Software	5	20.0
391	Transportation Equipment	5	20.0
392	Stores Equipment	25	4.0
393	Tools, Shop & Garage Equipment	20	5.0
394	Laboratory Equipment	10	10.0
395	Power Operated Equipment	20	5.0
396	Communication Equipment	10	10.0
397	Miscellaneous Equipment	10	10.0
398	Other Tangible Plant	----	----

NOTE: Acct. 398, Other Tangible Plant may vary from 5% to 50%. The depreciation rate
          would be set in accordance with the specific capital items in this account.

H.   SERVICE LINE INSTALLATION CHARGES

The Company requested permission to change its service line installation charges. These charges are refundable advances and the Company proposes that all Service Line installation charges be at "cost," as opposed to the current stated rates of between $500 and $1,200 based on service line size. The reason for this request is that the Company is finding the actual cost of installation far exceeds the existing tariff amounts, and can vary widely based upon the terrain and the length of the line to be installed.

Because the wastewater service area of Rio Rico Utilities is very hilly and because installation costs can vary widely, Staff recommends adoption of an installation charge of "At Cost" for all service line sizes as delineated in Table C of Exhibit JWL-2.

Table C. Service Line Installation Charges

Service Line Size	Current Charges	Proposed Charges
4-inch	500	At Cost
6 inch	650	At Cost
8-inch	800	At Cost
10-inch	1,000	At Cost
12-inch	1,200	At Cost

I.   Proposed Hook Up Fee Tariff

Rio Rico Utilities proposed the establishment of a hook-up fee ("HUF") tariff in this rate application. The Company proposed an $1,800 hook-up fee per new Service Lateral based on the Equivalent Residential Unit of 320 gallons per day ("GPD"). The Company however has not provided documentation to support its proposed HUF fee amounts.

In order to calculate hook-up fees, and determine if proposed wastewater plant items benefit the entire wastewater system, Staff sent a Data Request to the Company on July 10, 2009. The Company refused to provide any documentation to support this proposed HUF tariffs. Therefore, Staff can not conclude that the proposed HUF tariffs are reasonable and appropriate and therefore recommends the proposed HUF tariff be denied.
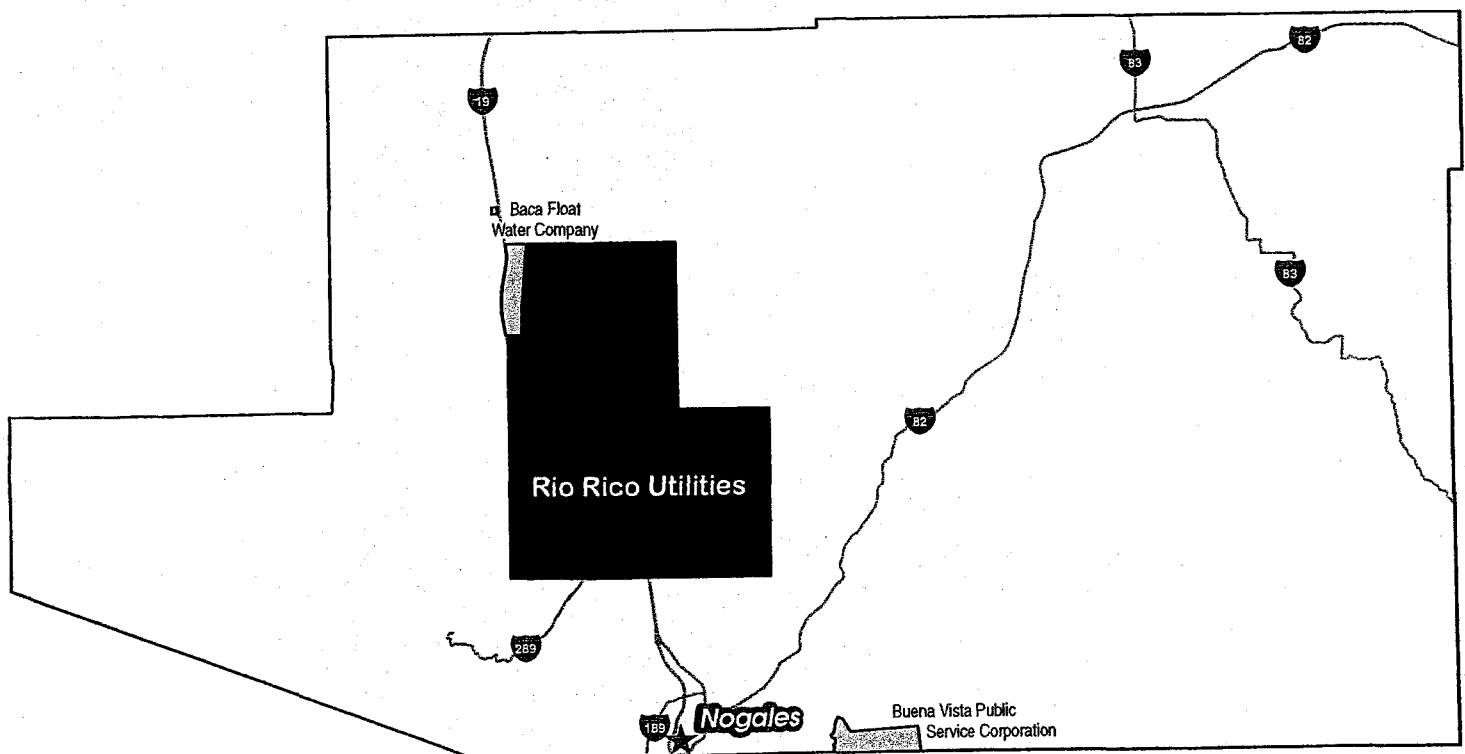
SANTA CRUZ COUNTY

Figure 1: County Map

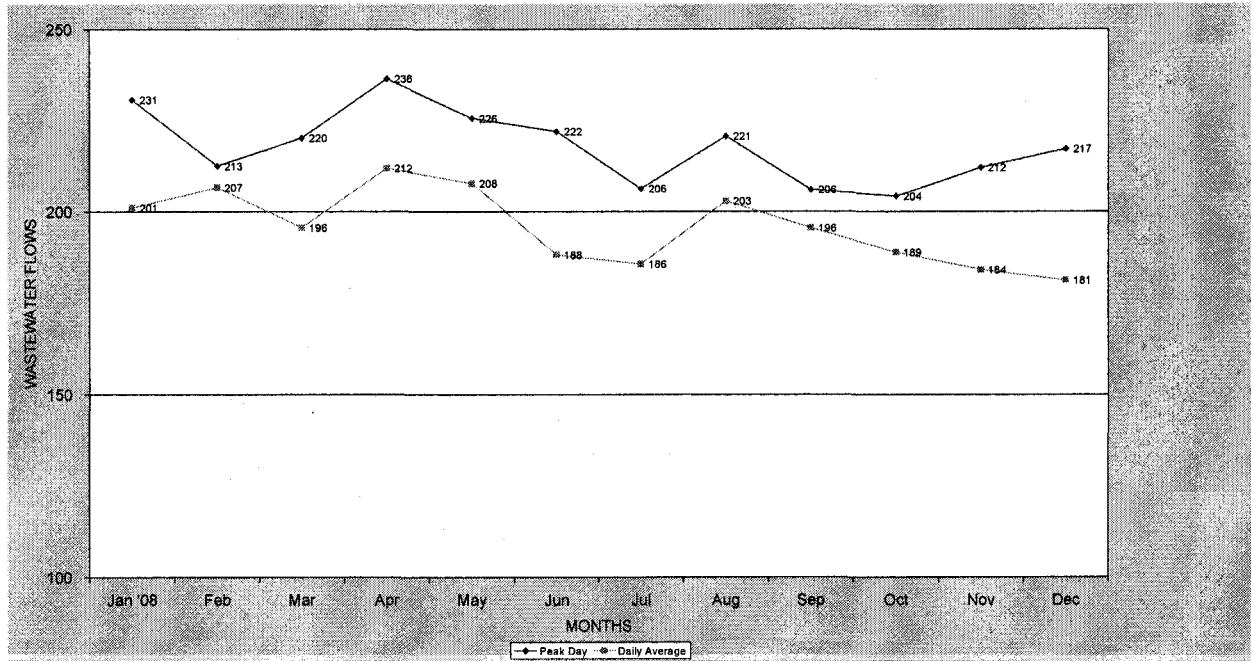# SANTA CRUZ COUNTY

Figure 2: Certificated Area

FIGURE 3 WASTEWATER FLOW